Y 4
. J 89/2
Ou 8

1042

GOVERNMENT
Storage

DOCUMENTS
OCT 7 1975
THE LIBRARY
KANSAS STATE UNIVERSITY

OUTER CONTINENTAL SHELF OIL AND GAS DEVELOPMENT

JOINT HEARINGS

BEFORE THE

SUBCOMMITTEE ON ADMINISTRATIVE PRACTICE AND PROCEDURE

OF THE

COMMITTEE ON THE JUDICIARY

AND THE

NATIONAL OCEAN POLICY STUDY

OF THE

COMMITTEE ON COMMERCE

UNITED STATES SENATE

NINETY-THIRD CONGRESS

SECOND SESSION

ON

FEDERAL PROCEDURES RELATING TO OFFSHORE OIL AND GAS DEVELOPMENT

AUGUST 5 AND OCTOBER 7, 1974

Printed for the use of the Committee on the Judiciary

U.S. GOVERNMENT PRINTING OFFICE
44-827 WASHINGTON : 1975

AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

COMMITTEE ON THE JUDICIARY

JAMES O. EASTLAND, Mississippi, *Chairman*

JOHN L. McCLELLAN, Arkansas
SAM J. ERVIN, JR., North Carolina
PHILIP A. HART, Michigan
EDWARD M. KENNEDY, Massachusetts
BIRCH BAYH, Indiana
QUENTIN N. BURDICK, North Dakota
ROBERT C. BYRD, West Virginia
JOHN V. TUNNEY, California

ROMAN L. HRUSKA, Nebraska
HIRAM L. FONG, Hawaii
HUGH SCOTT, Pennsylvania
STROM THURMOND, South Carolina
MARLOW W. COOK, Kentucky
CHARLES McC. MATHIAS, JR., Maryland
ROBERT P. GRIFFIN, Michigan
EDWARD J. GURNEY, Florida

SUBCOMMITTEE ADMINISTRATIVE PRACTICE AND PROCEDURE

EDWARD M. KENNEDY, Massachusetts, *Chairman*

PHILIP A. HART, Michigan
BIRCH BAYH, Indiana
QUENTIN N. BURDICK, North Dakota
JOHN V. TUNNEY, California

STROM THURMOND, South Carolina
CHARLES McC. MATHIAS, JR., Maryland
EDWARD J. GURNEY, Florida

THOMAS M. SUSMAN, *Counsel*
MARK L. SCHNEIDER, *Investigator*
ANN L. PHILLIPPI, *Staff Assistant*

COMMITTEE ON COMMERCE

WARREN G. MAGNUSON, Washington, *Chairman*

JOHN O. PASTORE, Rhode Island
VANCE HARTKE, Indiana
PHILIP A. HART, Michigan
HOWARD W. CANNON, Nevada
RUSSELL B. LONG, Louisiana
FRANK E. MOSS, Utah
ERNEST F. HOLLINGS, South Carolina
DANIEL K. INOUYE, Hawaii
JOHN V. TUNNEY, California
ADLAI E. STEVENSON III, Illinois

NORRIS COTTON, New Hampshire
JAMES B. PEARSON, Kansas
ROBERT P. GRIFFIN, Michigan
HOWARD H. BAKER, JR., Tennessee
MARLOW W. COOK, Kentucky
TED STEVENS, Alaska
J. GLENN BEALL, JR., Maryland

FREDERICK L. JORDAN, *Staff Director*
MICHAEL PERTSCHUCK, *Chief Counsel*
ARTHUR PANKOPF, JR., *Minority Counsel and Staff Director*
MALCOLM M. B. STERRETT, *Minority Staff Counsel*

NATIONAL OCEAN POLICY STUDY

FROM THE COMMITTEE ON COMMERCE

ERNEST F. HOLLINGS, South Carolina, *Chairman*

WARREN G. MAGNUSON, Washington
JOHN O. PASTORE, Rhode Island
VANCE HARTKE, Indiana
PHILIP A. HART, Michigan
HOWARD W. CANNON, Nevada
RUSSELL B. LONG, Louisiana
FRANK E. MOSS, Utah
DANIEL K. INOUYE, Hawaii
JOHN V. TUNNEY, California
ADLAI E. STEVENSON III, Illinois

NORRIS COTTON, New Hampshire
JAMES B. PEARSON, Kansas
ROBERT P. GRIFFIN, Michigan
HOWARD H. BAKER, JR., Tennessee
MARLOW W. COOK, Kentucky
TED STEVENS, Alaska
J. GLENN BEALL, JR., Maryland

FROM THE COMMITTEE ON PUBLIC WORKS

EDMUND S. MUSKIE, Maine
JOSEPH R. BIDEN, JR., Delaware
(Alternate)

JAMES L. BUCKLEY, New York

FROM THE COMMITTEE ON INTERIOR AND INSULAR AFFAIRS

LEE METCALF, Montana
MARK O. HATFIELD, Oregon

FROM THE COMMITTEE ON FOREIGN RELATIONS

CLAIBORNE PELL, Rhode Island
CLIFFORD P. CASE, New Jersey

FROM THE COMMITTEE ON APPROPRIATIONS

LAWTON CHILES, Florida
CHARLES McC. MATHIAS, JR., Maryland

FROM THE COMMITTEE ON GOVERNMENT OPERATIONS

ABRAHAM RIBICOFF, Connecticut
CHARLES PERCY, Illinois
EDWARD J. GURNEY, Florida (Alternate)

FROM THE COMMITTEE ON LABOR AND PUBLIC WELFARE

HARRISON A. WILLIAMS, JR., New Jersey
EDWARD M. KENNEDY, Massachusetts (Alternate)
RICHARD S. SCHWEIKER, Pennsylvania

FROM THE COMMITTEE ON ARMED SERVICES

STUART SYMINGTON, Missouri
WILLIAM L. SCOTT, Virginia

MEMBERS AT LARGE

HUBERT H. HUMPHREY, Minnesota
LLOYD BENTSEN, Texas
J. BENNETT JOHNSTON, JR., Louisiana
JOHN TOWER, Texas
BOB PACKWOOD, Oregon
WILLIAM V. ROTH, JR., Delaware

JOHN F. HUSSEY, *Director, NOPS*
JAMES P. WALSH, *Staff Counsel*
PAMELA L. BALDWIN, *Professional Staff Member*
ROBERT K. LANE, *Professional Staff Member*
EARLE E. COSTELLO, *Minority Professional Staff Member*

CONTENTS

Hearings held on: Page

August 5, 1974 1

October 7, 1974 79

Testimony of:

Allen, Leo, Special Legislative Commission on Marine Boundaries and Resources of the Massachusetts Legislature 63

Carter, Jared E., Deputy Under Secretary, Department of the Interior, accompanied by Dwight Patton, Bureau of Land Management 82

Chadbourne, Robert A., president, Associated Industries of Massachusetts 26

Devanney, Dr. John, Massachusetts Institute of Technology, project leader, Georges Bank Petroleum Study 5

Dingell, Hon. John D., a Representative in Congress from the 16th Congressional District of the State of Michigan, accompanied by William Demarest 191

Faramelli, Norman J., New England Oil Coalition 48

Fegan, Barbara, Association for the Preservation of Cape Cod 52

Fitzpatrick, Thomas, energy program director, New England Regional Commission 66

Frucci, Michael J., executive secretary, Cape Cod Chamber of Commerce; chairman, Governor's Advisory Committee on Travel and Tourism 17

Heller, Barbara, Environmental Policy Center 39

Jellinek, Steven D., Staff Director, Council on Environmental Quality 197

Ketchum, Dr. Bostwick, Woods Hole Oceanographic Institution 34

Lee, Henry, director, Massachusetts Energy Policy Office 59

Ligon, Duke R., Assistant Administrator, Federal Energy Administration 98

Menard, H. W., Chairman, Review Committee on Environmental Impact of Oil and Gas Production on the Outer Continental Shelf, National Academy of Sciences 202

Norris, Thomas A., president, New England Fisheries Steering Committee 15

Swatek, Paul, New England Sierra Club 45

Exhibits:

Letter to Ms. Anne Strauss from Robert R. Kifer, Marine Sanctuary Coordinator, Office of Coastal Zone Management, March 5, 1975 38

Letter to Senator Henry M. Jackson from John C. Whitaker, Under Secretary, Department of the Interior, May 4, 1974 71

Memorandum to Director, Bureau of Land Management, and Director, Geological Survey from Jared G. Carter, Deputy Under Secretary, Department of the Interior 84

Letter to the President of the United States from Members of the Senate, October 7, 1974 87

Letter to Senator Edward M. Kennedy from Jared G. Carter, Deputy Under Secretary, Department of the Interior, December 17, 1974, and supplemental material 107

Response and supplemental material to Senator Tunney from Department of the Interior re questions submitted by Senator Tunney, November 22, 1974 124

APPENDIXES

		Page
I.	New England Regional Commission energy research and policy formulation work program	207
II.	Southeastern New England water and related land resources study	228
III.	Letter to Rogers C. B. Morton, Secretary, Department of the Interior, from Senator Edward M. Kennedy, July 25, 1974, and response from John C. Whitaker, Acting Secretary, Department of the Interior, October 7, 1974	277
IV.	Letter to Vincent E. McKelvey, Director, Geological Survey, from Senator Kennedy, October 21, 1974, and response, November 26, 1974	292
V.	Letter to Senator Edward M. Kennedy from Dr. John C. Sawhill, Administrator, Federal Energy Administration, September 25, 1974	298

JOINT HEARING ON FEDERAL PROCEDURES RELATING TO OFFSHORE OIL AND GAS DEVELOPMENT

MONDAY, AUGUST 5, 1974

U.S. SENATE,
COMMITTEE ON JUDICIARY,
SUBCOMMITTEE ON ADMINISTRATIVE PRACTICE
AND PROCEDURE, OCEAN POLICY STUDY,
Boston, Mass.

The Subcommittee on Administrative Practice and Procedure and the Ocean Policy Study met, pursuant to notice, at 9:30 a.m., conference room, New England Aquarium, Atlantic Avenue, Boston, Mass., Hon. Edward M. Kennedy presiding.

Senator KENNEDY. We will come to order.

First of all, I want to extend my very warm appreciation to all of those here at the Aquarium for providing the Ocean Policy Study as well as the Administrative Practice and Procedure Subcommittee of the Judiciary Committee an opportunity to use this facility. It is one of the finest facilities in the city of Boston. I have traveled across the country, and I think this aquarium offers the most outstanding educational programs and brings knowledge of the seas to millions of young people not only in this city but throughout New England. To those of us who are interested in the oceans, it is really a model institution, and Mr. Prescott and Miss Ridgeway deserve particular mention for their kindness and their hospitality.

The hearing this morning is a joint effort of the Senate Ocean Policy Study on which I serve and of my own Subcommittee on Administrative Practice and Procedure of the Senate Judiciary Committee. Additional hearings will be held throughout New England and on the west coast to further the Ocean Policy Study.

The joint hearing reflects my view that both legislative and administrative actions are necessary to assure full protection of the public interest both in the procedures leading up to a final decision on whether or not leasing should go forward and in ensuring adequate protection of our interests in the event leasing is finally undertaken.

The issue of offshore oil and gas development is vital not just to the people on the coast of New England, but it is vital to every citizen. The number one issue in the Nation today is inflation, and food and fuel costs have been the primary items sparking the price spiral.

If offshore oil drilling will help reduce those costs, and if it can be done without jeopardizing our environment, and if it can be done without destroying our tourist and fishing industries, and if it can be done without distorting our future coastal development, then I doubt that there will be opponents to drilling.

But we want to be sure that all of the facts are known and that all the issues have been considered by the people of Massachusetts as

well as by Federal energy policymakers. We want FEA to tell us how much of the $700 million to $4 billion in estimated bonus payments to the Federal Government from Georges Bank leasing is going to arrive in Massachusetts. We want to know what share of the $22 million to $126 million in estimated royalty payments is to go to Massachusetts. And we want to know whether the costs from the impact of offshore oil development overshadow the potential benefit, particularly when the best estimates show that offshore oil from Georges Bank will meet only one-thirtieth of our need for oil in New England in 1985.

And part of the hearing design is to offer an opportunity—before the fact—for the public to make its voice heard. For the past several years, this administration has made its oil policies after consulting the oil industry and then has presented the public with a fait accompli.

The same attitude is shown in its opposition to an end to tax loopholes for the oil companies. The same attitude is shown in its opposition to a rollback of oil prices. The same attitude is shown in its opposition to the mandatory allocation program to ensure adequate supplies of heating oil and residual oil next winter.

When Massachusetts residents were paying 12 cents per gallon for home heating oil in 1973 and now they pay 26 cents per gallon, then something is very wrong with administration energy policies. And when we were paying $1.89 per barrel for residual oil a year ago and now we pay $12.25 per barrel, then you know those policies are in need of change.

These are the results of the failure of the administration over the past 5½ years to establish a policy—either long or short run—which meets our energy needs and which reflects the interests of our consumers.

This is the history that has convinced me that constant oversight, constant public disclosure and constant public participation must follow this administration every step of the way it travels toward offshore oil and gas development.

The failure to monitor its activities adequately in the past has produced a consumer rip-off of mammoth proportions. We cannot afford a similar fiasco with offshore oil.

I want to know and I believe the citizens of New England want to know: Is offshore drilling going to produce lower home heating bills to home owners? Is offshore drilling going to reduce the price of gasoline; is offshore drilling going to mean more jobs and a growing economy for New England?

Or is New England going to take all of the environmental risks attendant to offshore drilling only to see the resources and jobs shipped outside the region? Are we to see the value of our fisheries further diminished and the beauty of our seashore destroyed?

I believe these questions and others must be answered before valuable and nonrenewable public resources are handed over to private control. The President has called for 10 million acres to be leased to private industry in 1975, as much off shore acreage as has been leased in the past 20 years.

Before that occurs, I believe that we must demand answers to our questions.

The witnesses this morning are going to examine some of these questions. Their testimony will help both the Congress and the administration to balance the potential impacts—positive and negative—of offshore drilling. I hope they will help us determine whether current laws and administrative procedures are adequate to protect the public interest.

We have, I think, a very excellent group of witnesses this morning but a limited amount of time. I will have the rest of my statement included in the record.

[The complete statement of Senator Edward M. Kennedy follows:]

OPENING STATEMENT BY SENATOR EDWARD M. KENNEDY AT HEARING ON "OFFSHORE OIL: MASSACHUSETTS IMPACT"

I am pleased to open these hearings today into the impact on Massachusetts of the Administration's proposal to lease areas off our coast for oil and gas development.

This hearing is a joint effort of the Senate Ocean Policy Study on which I serve and of my own Subcommittee on Administrative Practice and Procedure of the Senate Judiciary Committee. Additional hearings will be held throughout New England and on the West Coast to further the ocean policy study.

The joint hearing reflects my view that both legislative and administrative actions are necessary to assure full protection of the public interest both in the procedures leading up to a final decision on whether or not leasing should go forward and on insuring adequate protection of our interests in the event leasing finally is undertaken.

The issue of offshore oil and gas development is vital not just to the people on the coast of New England, but it is vital to every citizen. The number one issue in this nation today is inflation; food and fuel costs have been the primary items fueling the price spiral.

If offshore oil drilling will help reduce those costs, if it can be done without jeopardizing our environment, if it can be done without destroying our tourist and fishing industries, if it can be done without distorting our future coastal development, then I doubt that there will be opponents to drilling.

But we want to be sure that all of the facts are known and that all of the issues have been considered by the people of Massachusetts as well as by Federal Energy policymakers. We want FEA to tell us how much of the $700 million to $4 billion in estimated bonus payments to the federal government is going to arrive in Massachusetts. We want to know what share of the $22 million to $126 million in estimated payments is to go to Massachusetts. We want to know whether the costs from the impact of offshore oil development overshadow the potential benefit, particularly when the best estimates show that offshore oil from Georges Bank will meet only one-thirtieth of our need for oil in New England in 1985.

And part of the hearing design is to offer an opportunity—before the fact—for the public to make its voice heard. For the past several years, this Administration has made its oil policies after consulting the oil industry and then has presented the public with a fait accompli.

The same attitude is shown in its opposition to an end to tax loopholes for the oil companies. The same attitude is shown in its opposition to a roll back of oil prices. The same attitude is shown in its opposition to the mandatory allocation program to ensure adequate supplies of heating oil and residual oil next winter.

When Massachusetts residents were paying 12 cents per gallon for home heating oil in 1973 and now they pay 26 cents per gallon, then something is very wrong with Administration energy policies. And when we were paying $1.89 per barrel for residual oil a year ago and now we pay $12.25 per barrel, then you know those policies are in need of change.

These are the results of the failure of the Administration over the past 5½ years to establish a policy—either long or short-run—which meets our energy needs and which reflects the interests of our consumers.

This is the history that has convinced me that constant oversight, constant public disclosing and constant public participation must follow this Administration every step of the way it travels toward offshore oil and gas development.

The failure to monitor its activities adequately in the past has produced a consumer rip-off of mammoth proportions. We cannot afford a similar fiasco with offshore oil.

On June 15, 1971, in Washington the Secretary of Interior released a schedule of events leading up to a sale of Atlantic Outer Continental Shelf resources between 1973 and 1976.

That announcement came without the benefit of environmental studies, without the benefit of economic impact studies, without the benefit of evaluations of energy alternatives and without the benefit of detailed government knowledge either of the advantages or disadvantages of offshore oil drilling in the Atlantic.

I opposed the precipitous embarkation on leasing at that time and urged an independent evaluation of environmental and economic issues and alternative energy sources by the National Academy of Sciences. The Administration opposed that effort for two years—despite its adoption by the Senate and despite its endorsement by numerous East Coast Governors. Finally, prior to the President's Energy Message of April 1973, former Energy Advisor James Akins recommended the inclusion in the Energy message of an environmental study of Atlantic offshore drilling.

Although the National Academy of Sciences was given a role as critic, the study itself was conducted by the Administration's Council on Environmental Quality.

Its report, while admittedly a first effort, left many loose ends and its ranking of Georges Bank development as offering the lowest relative risk is one that I dispute and that the National Academy of Sciences questioned.

This hearing today is designed to tie up some of those loose ends and to provide both the Congress and the executive branch with a better understanding of the potential impact of offshore oil drilling on our state.

Every Administration spokesman speaks of offshore oil and gas development as the answer to New England's energy needs. Yet the facts are unclear. We may well import as much oil in the future as we do today, even with the most optimistic production estimates for offshore drilling.

The Administration implies that an environmental impact statement is a mere formality before actual leasing is underway. Yet, the National Academy of Sciences critique of the Administration's first environmental review was unmistakeably cautious, stating, ". . . the Committee agrees with the CEQ that present knowledge is inadequate for assessing thoroughly the likely physical and biological consequences of OCS development activities on the environments in question."

Perhaps more important, the National Academy reiterated the findings of every recent study on oil and gas development on the Georges Bank—that "potential impacts on commercial fisheries should be evaluated before development begins."

Our fishing industry has been a mainstay of our economy and of the nation's food supply since colonial days. In recent years, New England fishmen have been faced with subsidized foreign competition which has captured some 85 percent of the fishing on the Georges Bank and depleted our stocks in the process. Even so, our fishermen land almost $26 million worth of hake, haddock, cod, flounder, skate, and other species, at Boston, Gloucester and New Bedford every year.

We must not risk that industry without being absolutely sure that there is no alternative or without taking every precaution to minimize disruptions. Yet, even the most basic data currently is unavailable to Department of Interior decisionmakers. I believe every document or fact held by private industry must be made available to the government before the first lease is sold. A National Science Foundation-funded study noted: "In addition to lacking background data, the Department of Interior has limited geological and geophysical data to use in its management and control of OCS oil and gas development."

Perhaps the single statistic that underscores the inadequacy of current data is that less than 3 percent of the U.S. Outer Continental Shelf was mapped as of 1972.

All of these factors make it more and more essential that we demand full answers to basic questions that concern the citizens of New England. These are the same questions I posed last year during the Council on Environmental Quality hearings. I want to know and I believe the citizens of New England want to know: Is offshore drilling going to produce lower home heating bills to homeowners? Is offshore drilling going to reduce the price of gasoline? Is offshore drilling going to mean more jobs and a growing economy for New England?

Or is New England going to take all of the environmental risks attendant on offshore drilling only to see the resources and jobs shipped outside the region?

Are we to see the value of our fisheries further diminished and the beauty of our seashore destroyed?

I believe these questions and others must be answered before valuable and nonrenewable public resources are handed over to private control. The President has called for 10 million acres to be leased to private industry in 1975, nearly one-fifth of our available offshore lands and as much acreage as has been leased in the past 20 years.

Before that occurs, I believe that we must demand answers to our questions.

First, we must be sure that offshore drilling is considered as part of an overall national energy policy that balances the costs and benefits of all sources of energy. One element must also be to consider whether some portion of the OCS resources should be preserved as a national hedge against a future boycott or any other emergency threat to our energy supply. It must be consistent as well with coastal zone policies that protect our shorelines from unplanned development.

Second, we must be sure that the technology is adequate to the task and that there are regulations strict enough to ensure that adequate technology, when it is available, is used. The NSF-funded study by the University of Oklahoma stated that "Most of these weaknesses in physical technologies exist because, until very recently, standards used for determining the adequacy of OCS technologies have been based largely on industry's judgment of what is economically feasible." We cannot afford private interest rather than the public interest as the standard for offshore oil development.

For that reason, as Chairman of the Office of Technology Assessment Board of Directors, I have asked that one of the new Congressional advisory agency's first priority be the examination of offshore technology.

Third, we must insure that leasing procedures and compensation standards are adequate to protect the public interest. Most witnesses before the Ocean Policy Study hearings in Washington have concluded that without some form of revenue sharing with adjacent states, the net result will be an economic loss to the coastal states.

Fourth, we must consider as an alternative to total private control over offshore development—the establishment of a Federal Oil and Gas Corporation—to both obtain independent data and to check the pricing policies of the private companies. I have cosponsored legislation for that purpose. At the very least, we should tightly control the prices to be charged for the oil products produced.

Finally, we must establish clear and enforceable regulations not only to minimize the potential for accidents but to assign liability to the developer for any and all costs. Not only must the rules be set forth but the institutional mechanisms for enforcement must be in place before any leases are offered.

The witnesses this morning are going to examine some of these questions. Their testimony will help both the Congress and the Administration to balance the potential impacts—positive and negative—of offshore drilling. And they hopefully will help us determine whether current laws and administrative procedures are adequate to protect the public interest.

In order to provide the time for all the many witnesses to testify, I hope they will be able to limit their statements to 10 or 12 minutes and, of course, we will include in the record any additional detailed statements regarding their particular concerns.

Our first witness this morning is Prof. John Devanney of MIT. Dr. Devanney served as project director for the Georges Bank Petroleum Study published in February 1973 which assessed the potential economic and environmental impacts of petroleum exploration and development off the New England coast. Professor.

STATEMENT OF PROF. JOHN DEVANNEY, MASSACHUSETTS INSTITUTE OF TECHNOLOGY, PROJECT LEADER, GEORGES BANK PETROLEUM STUDY

Dr. DEVANNEY. Thank you, Senator.

Much has been made about all the things we don't know about offshore oil. This morning I would like to very briefly talk about some of the things we do know. It has been 2 years since New England first

learned that there was serious interest in the Georges Bank as a source of petroleum, and in that time MIT has conducted two rather sizable studies relating to offshore oil drilling in the Georges Bank in particular. I would like to briefly highlight a couple of the results of those studies, results which I think have important implications for policy.

First of all there is the environmental question. How much environmental damage will there be, and who will bear the cost? Relating to that question, I would like to have the first slide, please.

Senator KENNEDY. I might, before we have the first slide, explain this chart very briefly. This was prepared by NOAA, the National Oceanographic and Atmospheric Administration, to indicate where oil and gas development may take place and where the fishery resources are on Georges Bank.

Each circle, as I understand it, covers a radius of 25 miles. They are located in the areas where information has demonstrated a likelihood of oil and gas deposits. The fish distribution indicated is based on the patterns that exist in the fall of the year.

Dr. DEVANNEY. Thank you, Senator. I will be referring to that chart as we go along.

The first slide, please. [Slide shown.]

Our environmental analyses investigated four issues: How often and how much oil will be spilled; what can we say about where the spills will go; how will the slick change along the way; and how much oil will be discharged on a planned basis from a given hypothetical discovery.

With regard to the first question, even a cursory examination of oil spill statistics reveals three characteristics of spills—next slide [Slide shown]—which together present an extremely difficult problem for the statistician. The range of spill sizes is extremely large, from a few gallons to the Torrey Canyon of 30 million. The vast majority of spills are at the lower end of this range, less than 1,000 gallons. However, most of the oil spilled is spilled in a very few very large spills. For example, the Torrey Canyon spilled twice as much oil as all the oil which was reported spilled in the United States in 1970, and two-thirds of the oil spilled in the United States in that year was spilled in three spills. Therefore, we have done a rather extensive study of these large spills, and using past spill statistics developed estimates of the likelihood of the number of such spills over the life of three hypothetical finds.

Next slide, please.

At the top you see an estimate of the probability of one of these large spills from something that has been called a small find, that is 500 million barrels in place; medium find, 2 billion barrels in place, in the middle; on the bottom, a very large find, 10 billion barrels in place.

As you can see, for the smallest of the three find studies, it is a pretty high probability that you will not have a large platform spill. However, if you are talking about a very large find, as at the bottom of the figure, there is a fairly high probability that you are going to have somewhere between two and about eight such spills.

So we are talking about a few to a handful of large spills for sizable finds on the Georges Bank.

You can play this same game with extremely large spills. Next slide. This figure shows our estimates of the probability of a tanker spill, over 10 million gallons, one-third the size of Torrey Canyon. As you can see, for the smaller development, it is quite likely that you will not have one of these things, even if we bring the find ashore by tankers. If we start talking about the 10 billion barrel in-place field down here at the lower left, then the probability of having one such spill is getting up in the neighborhood of 10 percent. All these estimates are based on recent past spill statistics. No credit is given for future improvements in preventing spills.

We also looked at the possibility of small operational spills. Next slide. Generally what you find is that, assuming we do no better than we have done in the past, we are going to have a large number of small operational spills. These spills average about 300 gallons in size. Most of them smaller than that. But for a sizable find, you are talking of thousands of such spills. This slide indicates that for a find of 2 billion barrels in place, a medium large find, we are talking somewhere between 1,800 and 2,200 spills over the life of the find, these small platform spills. So you are going to have a bunch of those.

We have also developed estimates of the likelihood of the total volume spilled over the life of the find. Next slide, please. This slide is a little bit hard to read, but essentially what it says is that from platforms, the solid line in the slide, you are going to have somewhere between 1 million gallons and 10 million gallons spilled over the life of the find; from pipelines, if you bring the crude ashore by pipelines, slightly more; and from tankers, slightly more again.

The moral I draw from this slide is that while pipelines are slightly better than tankers at bringing the oil ashore, the differences are not as much as some people have claimed. They are both in the same ballpark.

The next question is given that you have a spill, where will it go? We have combined current data and wind statistics to make estimates of the likelihood of various spill trajectories by season, launching hypothetical spills from each of the circled points shown in the next slide.

Well, once you have a spill, it will spread as well as move about. I think it is interesting to compare this slide which shows the final spreading areas, our estimate of this final spreading area, for three very large spills. The largest circle there should be labeled 30 million gallons. That is a Torrey Canyon sized spill. The other spills are one-tenth that size and one-hundredth that size.

Next slide, please.

These are the same three spills close to shore. I do not know what these two slides mean to you people, but I think at least it says that in a certain sense the same spill near shore can be a hell of a lot bigger than that spill offshore. Or to put it more precisely, the Georges Bank is a much bigger place than Cape Cod Bay. Sometimes we forget that because most of us have never been there.

Here are the points from which we launched hypothetical spills. All the little circle points ranging westward from the EDS–1, which is one of the sites on Senator Kennedy's chart. These circles represent a set of hypothetical spill launch points, moving closer to shore in toward Nantucket. Some of the results are shown in the next slide.

This slide shows the probability of the spill coming ashore as a function of how far offshore the original spill occurred. The far right hand is at EDS–1 on the very eastern portion of the Bank, and right about, well, 30–40 miles east of Nantucket is EDS–4 which is the potential drilling area closest to shore. As you can see, the probability of the spill coming into shore depends on how far offshore you started. It is also very sharply dependent on season. In this area during the cold weather months we have a westerly to northwesterly component in our winds, and in the spring and summer we have a southwesterly component in our winds. The current in this area is a general southwesterly drift. The combination of the northwesterly winds and southwesterly current during the cold weather months tends to push almost all of the spills offshore; but during the spring and summer, the southwesterly component can push some of the spills in toward land. So we are dealing with probabilities of reaching shore ranging from nil in the winter from points far offshore to perhaps as much as 30–40 percent for potential drilling site closest to Nantucket in the warm weather months.

Next slide, please.

We have also done calculations of how long the spills are at sea before they hit shore. For the southern portion of the Bank, the minimum time to shore observed was 7 days and the average time 60 days. From the eastern portion of the Bank, the minimum times were all over 50 days. These are fairly sizable times.

Light crude spills which come ashore after 2 or more weeks at sea will not be noticeable to the untrained eye. A heavy crude spill at sea for this length of time would come ashore as an army of tarballs. In neither case would the spill reach shore in the form of the conventional slick.

OK, the next question we looked at is if we do have a spill and it is moving about under the influence of wind and current, what damage will it do along the way? We were particularly worried about the effects of a spill on larvae. The larvae of most of the commercially important Georges Bank species are released into the water column and then float to the surface. Laboratory tests have indicated that some of the components of oil can be toxic to at least certain types of larvae at concentrations of one part per million or less. It appears to us likely that all the larvae which are contacted by a fresh spill would be killed. The question then arises could an unfortunately placed large spill wipe out a significant portion of a year class of a species via a larval kill.

Next slide, please.

We obtained some rough data on the spawning areas of the most important species—next slide, please—and the spawning periods. Next slide. According to this data, even the most concentrated species spawn over about 25 percent of the Bank. All the species had spawning periods of approximately 100 days.

We then released very large hypothetical spills in the worst place at the worst time relative to spawning area and period and then assumed that while the spill was over the spawning area, it contacted all the larvae which rose into it. We were only able to kill 1 or 2 percent of the year class this way—a figure which is probably not significant

given natural fluctuations and the fact that many more larvae are released than can be supported by the environment at adulthood.

We have also studied concentrations of oil, particularly aromatics, which could be attained in the vicinity of a platform as a result of the discharge of produced water into the ocean, reservoir water which will still retain small concentrations of oil after separation. Once again, however, our results were negative in the sense that even under moderately pessimistic, worse case assumptions, the areas within which aromatics would reach levels at which toxic responses have been observed for even the most sensitive organisms were extremely small compared with the overall size of the Bank.

In general, then, we have been unable to identify any environmental effect associated with offshore oil production which appears likely to materially upset the Georges Bank ecosystem. At present my only real worry about the offshore environmental impacts of OCS production involves the possible effect of sedimentation of portions of the slick, including possibly the napthalenes, on benthic organisms such as scallops.

Now I would like to turn briefly to what we have learned about the economic impact of offshore oil on the region. As part of our Georges Bank Study, we developed a large scale simulation of the New England petroleum system, which we exercised under a number of hypotheses. Next slide, please. Concerning the amount of petroleum found on the Bank, refinery locations, type of product distribution system, whether the OCS is under control of the Federal Government, the States, et cetera.

As you can see from this slide, the simulation starts with a crude source at either a foreign port or on the Bank, transports this crude to a specified refinery, refines the crude, and delivers the products to the major regional reception ports. Next slide. Just a schematic of the overall simulation.

We looked at five different refinery locations, including Delaware, eastern Maine, southeastern Massachusetts, and Point Tupper; varied product distribution systems, including the possibility of a pipeline running up and down the coast.

Next slide, please.

Here are the major variables in this simulation. All these variables can be changed and the resulting effect on New England real income studied.

The most striking finding of this study is that in terms of resource cost, offshore oil can be very cheap. Our analyses indicate, for example, that the cost to the Nation of landing oil from a 2 billion barrel inplace find on the Bank would be in the neighborhood of 80 cents per barrel. This is the cost before lease payments, before royalty payments and before any taxes—just the opportunity value of the men and steel required to produce this petroleum and bring it to shore. When one compares these values with the cost to the Nation of OPEC oil, $7 a barrel or more, then it is quite clear that OCS petroleum can be very cheap indeed. A find which results in hundreds of millions of barrels being landed will result in an increase in national real income of $1 billion or more. A really large find would be worth $10 billion or more nationally.

With numbers like this, it is of considerable interest to ask ourselves where this increase in national income will show up. In this regard, the Georges Bank Study reached another extremely important conclusion. Barring extensive price control, Georges Bank oil will have no effect on the price of oil to the New England consumer.

Under competition, the market price of oil is set by the cost of the most expensive unit of oil which is consumed within the market. Even a very large find will not push all foreign oil off the east coast market. We will still be importing some foreign oil at whatever price the OPEC market countries' bargaining leads to. Unless the market nations do a much better job in this bargaining than they have in the recent past, we can be sure that this price will be much more expensive than the cost, the national cost of domestic OCS oil. The price of oil products in New England will be determined by the price of OPEC crude and not by the cost of Georges Bank petroleum.

If the consumer is not going to see the increase in national income in lower prices, where then will the increase show up? It will show up in lease and royalty payments, taxes and in investor profits which will not otherwise occur if such a find were not exploited.

Our studies of lease and royalty payments made in the gulf through 1971 indicate that at least up to that time, the bulk of the increase in national income associated with offshore oil was going to the public in the form of lease and royalty payments. Competitive bidding had been successful in resulting in the developers bidding away most of the gravy to the public.

There are two obvious conclusions we can draw from this:

First, from the point of view of regional income, the all-important question is: who is going to get the lease and royalty payments? If it is the Federal Government, then the increase in national income will be spread over the whole Nation in the form of either more public services or a tax break that otherwise would not happen. New England and Massachusetts would see only their per capita share of this increase, about 5 percent and 2½ percent respectively.

Next slide, please.

This slide refers to a fairly large find. As you can see, the increase in national income is independent of who controls the Bank; that is, who gets the lease and royalty payments and whether prices are regulated or deregulated. However, the increase in New England income is extremely sensitive to these variables. The best thing that can happen to the region is that the region gets the lease and royalty payments and gas prices are regulated. This particular find had a large amount of gas being landed with it. The worst thing that can happen is that the Feds get all the lease and royalty payments and gas prices are deregulated.

As you can see, the difference in regional income is a factor of 10 with a result of changes in these policy variables, from one extreme to the other. You can also see that the numbers we are talking about are quite large, staggeringly large.

If on the other hand, the region received all the lease and royalty payments by, for example, a favorable ruling in Maine versus the United States, then the region would receive the great bulk of the increase in national income. For a sizeable find, we could be talking about thousands of dollars per head for Massachusetts.

I don't know what the chances are of winning Maine versus the United States, but it is obvious if one takes a parochial, selfish view of the problem, Massachusetts may want to rethink its position on legislation which would return a portion of the Federal offshore leasing and royalty payments to the adjoining state. Actually there is a deeper argument for such legislation. As we have seen, the bulk of the increase in national income associated with offshore oil is spread over the whole nation in a rather invisible fashion—a tax break that would not otherwise occur.

On the other hand, the environmental disbenefits of an offshore oil development are localized in the immediate vicinity of the development in a highly visible fashion. Thus, it becomes quite rational for those in the immediate vicinity to oppose it for they see only a minute portion of the economic benefit but bear a large share of the environmental disbenefits.

A properly designed compensation system may identify situations where it is possible to make everybody better off, after compensation, from a development which would not take place without compensation. From either point of view, the selfish or the equity, it seems to me that giving the adjoining coastal State a portion of the OCS revenues deserves very serious consideration.

The second conclusion to be drawn from the importance of lease and royalty payments is the importance of maintaining competition in the bidding if one wishes to prevent the lion's share of the increase in national income from showing up in oil company profits.

Provided competition can be maintained among bidders, the present bonus bid system has much to recommend itself from both the national income and income distribution point of view. Since the bonus bid is a sunk cost as soon as it is made, it will not affect exploration and development decisions. The man who can pay the most for a lease is likely to be an efficient developer. And at least up to the recent unforeseen price rise, the policy has had the effect of transferring the bulk of the increase in national income associated with offshore oil directly to the general public revenues, resulting in a more equitable distribution of wealth than if this transfer had not happened. The industry argument that the policy slows development on grounds that capital required for bonus bids could be used in the actual development is understandable but specious.

Assuming the Federal Government spends no more money on public services with the bonus bid revenue than without, the bonus bids employ no more of the Nation's capital than would be employed by the increase in other public revenues which would be required if the bids did not exist. As long as offshore prospects appear profitable to the Nation's capital market, capital will be made available to these projects. Given the present discrepancy, wide discrepancy between landed price and the resource cost of OCS oil, this requirement is certainly met. The size of recent bids together with the way that successful bidders are falling all over each other to obtain rigs and platforms is prima facie evidence that the bonus bid itself has not slowed development.

However, there is one growing problem associated with lease bidding which arises directly from the wide discrepancy between the resource cost of OCS oil and its value; and that is, maintaining

competition in the face of the size of the lease bids implied. Top bids for single 5,000-acre tracts are now climbing over $200 million. This is an awful lot of money to put up in the face of very considerable uncertainties as to what is there. Only a very few companies with extremely large capital bases can raise this kind of dough given the risks involved. As a result, a single company bid on a premium tract has become a rarity. Combines of even very large majors are common. These combines not only decrease the number of potential bidders but are also interlocking in the sense that a company may be a member of one combine on one tract and another on another tract. In such situations, it would be almost unnatural if both combines did not know what the others' basic strategy was. In short, without hypothesizing or intimating intentions of collusion on the part of the bidders, I foresee that it is going to be increasingly difficult to maintain effective competition among bidders in future lease sales. And once you lose effective competition, the whole argument for bonus bidding goes down the drain.

For this reason, I think the Nation should seriously consider public exploratory drilling. In OCS development there are two distinct phases—exploratory drilling which is done from mobile rigs in which a rig moves in, puts down a well or two, and then pulls up its anchors and moves on. If commercial amounts of oil are found, then production platforms, fixed permanent platforms, are built, brought out and erected and production wells are drilled from these permanent structures.

Under this proposal, the first phase only, exploratory drilling would be publicly funded. After the resulting finds were evaluated, the raw data and results would be made public, at which time competitive bidding for the rights to development of production facilities would take place in which bidding combines of firms, any size firms, would be made illegal.

The point is that with the results of the exploratory drilling available, the amount of recoverable oil and gas and the cost of producing this petroleum could be estimated within a reasonable degree of accuracy. An independent developer could take the results to a financial institution with a reasonable hope of obtaining capital. In short, after exploratory drilling, he could mortgage the oil and gas which had been found in the same manner that coal companies mortgage their reserves now. Under the present system, this is impossible with offshore oil. The big guy would not have nearly as great an advantage over the small guy in financing lease bids as he does now. The system would also have some obvious environmental advantages. If exploratory drilling revealed unforeseen environmental dangers, then the tract would simply not be put up for lease.

The majors' basic argument against public exploratory drilling is that a government that cannot run a postal service certainly cannot run an efficient exploratory drilling program. I do not believe the analogy is a fair one. At present, oil companies do not do their own geophysical surveys or exploratory drilling. This work is contracted out. Much of the required expertise is in the hands of these contractors. Presumably these same contractors will be available to a publicly run program. Thus, such a program need not involve Government employees manning the rigs, which almost certainly would be a disaster, but rather a relatively small staff administering

the program, integrating the results, and letting contracts on a competitive basis for the actual explorational work.

There are a number of problems with the idea but when one compares it with the alternatives, I think it deserves some very careful consideration. The present lease bidding system, which up to 1972 had been quite successful in transferring a substantial portion of the increase in national income associated with offshore oil to the public, may be in trouble.

Thank you.

Senator KENNEDY. With regard to the oil spill dangers for coastal areas, do your charts indicate that they are real dangers, the extent of which is going to depend upon the season, winds and other factors? Have you made any assessment, based on the earlier charts that gave the approximate number of spills and their source and cause, what the impact would be on the coastline and the coastal area?

Dr. DEVANNEY. We did come to the conclusion that a spill near shore which came ashore fresh would be much more damaging certainly in an economic sense than a spill which stayed offshore. The cost of spills that stayed offshore, we have not really seen any costs that we could measure. However, it is true that spills that come ashore on a high value shoreline are expensive. Postmortem on the Santa Barbara spill indicated that the spill had cost society approximately $5 a gallon or something in the neighborhood of $15 million.

So if Georges Bank drilling resulted in more near-shore spills than would otherwise occur, then that would be something that should be given very careful consideration. However, if one assumes that the same amount of oil is going to be consumed in the region with and without Georges Bank drilling, then there may not be very much difference in near-shore spillage with and without the development on the bank.

Senator KENNEDY. Who ends up paying for the spills?

Dr. DEVANNEY. Well, the only real example we have is Santa Barbara, and in this case it was estimated that the cost to society was $15 million of which the oil companies bore directly, Union bore directly somewhere in the neighborhood of 10 million gallons.

Senator KENNEDY. $10 million.

Dr. DEVANNEY. $10 million, I'm sorry. That left $5 million left over which was borne by the property owners, by the people who didn't have the recreational advantages, etc. Now, of course, very recently I understand California won its suit against Union. I believe that suit was worth $9 million.

Senator KENNEDY. How long did that take?

Dr. DEVANNEY. Five years now.

Senator KENNEDY. At least we should consider, if we are going to move ahead in this area, that there may be some liability procedures we ought to write into the law. We can assume that if there is an oil spill and it lands on a coastal area, that area will have to bear the burden. I suppose, it falls on the owners of coastal property.

Dr. DEVANNEY. Compensation procedures could be improved, yes.

Senator KENNEDY. That should be considered.

With regard to the threat to marine life, I wish you would elaborate. Do you feel that even with the kinds of projected spills you are talking about, that this is a marginal threat?

Dr. DEVANNEY. We have not been able to identify anything that you could really call more than marginal. As I say, I am still worried about the benthic organisms, especially the scallops. They could be contaminated by a large spill.

Senator KENNEDY. Certainly that is an important industry in this State. Your conclusions are that the threat to that particular industry is more severe than to others, is that correct?

Dr. DEVANNEY. Yes. We would be very surprised if any of the species in the water column showed noticeable effects from an offshore oil spill. We would be less surprised.

Senator KENNEDY. How significant is the threat to scallops? Is it 1 year, or are you talking about destroying the beds for some period of time?

Dr. DEVANNEY. I do not know, Senator. We have not done that work.

Senator KENNEDY. Then that is an area where there ought to be a good deal more knowledge and research.

Dr. DEVANNEY. Yes, that is the one area I am worried about.

Senator KENNEDY. Have you formed any conclusions about the economic impact of offshore drilling? You made some observations about whether the region would benefit as a result of bonus bidding or from some kind of revenue sharing. Did you make any assessment of the other economic impacts that would occur in the region?

Dr. DEVANNEY. Yes, we looked at payrolls involved and came to the conclusion that, assuming that Georges Bank oil did not result in refining in the region, the payrolls associated with offshore development itself were insignificantly small compared with the numbers we were talking about earlier in the lease and bonus bids. I have a slide on that but it is not worth showing. That is not where the big economic payoff is. The big economic payoff is in the lease and royalties.

Senator KENNEDY. Now, the President announced a policy for leasing 10 million acres and indicated that there is going to be a general review of the total program in terms of environmental impact, to be followed by specific assessments of specific areas.

As someone who has given a good deal of time to this particular issue, do you see steps that ought to be taken before drilling takes place; additional information we need to make sure that the public interest is fully protected?

Dr. DEVANNEY. Well, if you take the selfish view of New England, it is quite clear what you should do. You should say, bring all the resources you can to bear and say, that there will be no drilling on Georges Bank until we get a share of the lease and royalty payments. That is what I would do.

Senator KENNEDY. For the reasons that you have outlined here. Besides the economics, do you think that there is sufficient information from an environmental point of view to make decisions about whether we ought to move ahead with leasing the 10 million acres by 1975?

Dr. DEVANNEY. I do not want to talk about the Nation in general, but with respect to Georges Bank, I think yes, with the possible exception of some studies of sedimentation of the slick on the benthos. That could be worth doing. I certainly could not argue for going back to scratch and restarting all the environmental studies again. For what we would learn, it would not be worth it.

Senator KENNEDY. All right, Dr. Devanney, thank you very much. I don't know how long you can stay with us, but we may try to have you come back, it you can.

Dr. DEVANNEY. Thank you, Senator.

Senator KENNEDY. Next we have a panel to discuss the economic effects of petroleum exploration and development on Georges Bank; Mr. Norris, president of the New England Fisheries Steering Committee, will outline the effects on the fishing industry; Mike Frucci of Cape Cod Chamber of Commerce will tell about effects on tourism and recreation; and Bob Chadbourne of Associated Industries will outline the view of industries facing energy shortages and what they see as the impact of off-shore drilling on our State's economy.

Mr. Norris.

STATEMENT BY THOMAS A. NORRIS, PRESIDENT, NEW ENGLAND FISHERIES STEERING COMMITTEE

Mr. NORRIS. Thank you, Senator. My name is Thomas A. Norris. I am president of the New England Fisheries Steering Committee, vice chairman of the New England Fisheries and Conservation Committee. I am also chairman of the United States Industrial Advisors to the U.S. Commissioners to the International Commission for the Northwest Atlantic Fisheries. Today, I am serving in a dual capacity representing the New England Fisheries Steering Committee and the New England Fisheries and Conservation Committee who are deeply concerned regarding the anticipated oil exploration off the New England coast, primarily in the Georges Bank area.

Fishing, America's first industry, has experienced many troubled years from 1960 to the present time by over-fishing practices by a minimum of approximately 20 foreign nations who are exploiting the Georges Bank area, one of the most prolific fishing grounds in the world, which offered three billion pounds of fish in 1960 and today is limping along on a quota basis. Within the past 5 years, the New England fishermen have become part of what well may be called the food and fuel crisis.

In the middle 1960's, very little attention was paid to the plight of the New England fishing industry resulting in the tremendous increase in foreign fishing activity which, during that time, caused a severe depletion of the fisheries stock. However, since 1970, the industry advisors to the International Commission of the Northwest Atlantic Fisheries, ICNAF, have been able to convince the U.S. State Department and the National Oceanic and Atmospheric Administration, NOAA, that survival of the industry depends on a dual approach of scientific and economic information. Today, special emphasis is being placed upon the future economic outlook of the industry. By constant persuasion, the industry is now anticipating possible relief in the establishment of a 200-mile fisheries zone giving management preference to the coastal fishing states.

Plans for a 200-mile economic fishing zone were announced to the Law of the Sea Conference now taking place in Caracas, Venezuela. This may well be the first opportunity that our local industry has had in planning for its revitalization. After several years of oil explora-

tion sponsored by major oil interests, plans are now moving forward to drill for oil and gas in the Georges Bank area. Deep concern is being expressed within the industry regarding the effect of oil drilling the New England coast. Consistently, oil company representatives have been asked to furnish information proving that an oil spill will will not effect fish larvae or fish plankton. Apparently this is a difficult question to answer. If an oil spill occurs, it could well wipe out any gains realized by a 200-mile fishing limit. Obviously, we are dealing with an unknown.

Any activity that would upset the ecological chain of fish replacement could well have disastrous effects on all species. The present ICNAF policy accepts the theory that you cannot segregate species in a singular fashion, because of the constant intermingling of fish stocks.

The ocean must cease to be a dumping ground for all kinds of material, rather, it must be protected. From Nova Scotia to Cape Hatteras, the ocean, under normal circumstances, will yield 30 to 50 pounds of protein per acre, per year. With the vast fisheries resources off the coast of New England, the volume of potential protein is staggering. Again, this evidences the reproductive ability of the fisheries chain.

According to fisheries scientists, even a minor oil spill could well destroy or have a deleterious effect on young fish. We are aware of the need for energy, but every consideration must be given to fish and seafood, which is a renewable resource, whereas oil is an expendable resource.

It is well to bear in mind certain statistical information relative to the economic structure of the New England fishing industry. To get a closer view of the decline of the fisheries, in 1961 Boston unloaded 115 million pounds of fish valued at $9,300,000, in 1965, 101 million pounds of fished value at $101 million, and in 1972, 22 million pounds of fish valued at $5,009,000. Actually in a period of 12 years, the landings in Boston have declined by over 80 percent or 100 million pounds of fish. With a possible renaissance facing the New England fishing industry under the 200-mile fishing legislation, a careful appraisal must be made regarding the effects of oil drilling on the fishing grounds and its ability to exist without damaging fish stocks. To place an additional burden on the New England fishermen at this time hardly seems fair. Our industry would recommend that through government, oil, and industry personnel a firm plan be presented regarding the necessity of drilling the Georges Bank area as a last resort.

We are aware of the crucial need for fuel, but we must proceed cautiously. The net gain would be minimal should oil exploration temporarily meet energy's needs, while at the same time destroy fish and seafood.

We welcome and appreciate the opportunity to appear before the Ocean Policy Study Committee to present the New England Fisheries' concern regarding oil drilling.

I would like to also state that I am sitting in today for Hugh F. O'Rourke who has been hospitalized for about 6 weeks.

Thank you, Senator.

Senator KENNEDY. Thank you very much. How is Mr. O'Rourke?

Mr. NORRIS. He is coming out of the hospital today.

Senator KENNEDY. I wish you would extend to him my best wishes. He is an old and good friend.

Mr. NORRIS. I will, sir.

Senator KENNEDY. You are aware as is Mr. O'Rourke that we have been trying for years to get funding for a program that would inventory fishery resources on Georges Bank and develop more information, more knowledge about the fishery resources of our area. We have been turned down time and time again and have been unable to get Federal funding for such a survey.

One of the aspects of the critique of the CEQ study made by the National Academy of Sciences was the fact that they felt there was inadequate consideration of the impact of offshore drilling on fish or other marine resource. I gather you feel the same way.

Mr. NORRIS. Yes, I certainly do.

Senator KENNEDY. Thank you very much.

STATEMENT BY MICHAEL J. FRUCCI, EXECUTIVE SECRETARY, CAPE COD CHAMBER OF COMMERCE

Mr. FRUCCI. Senator, it is indeed a pleasure and a privilege to appear before you this morning, and, though I am to represent the resort industry of the Commonwealth, I hope you will forgive me for placing considerable emphasis on Cape Cod, the area with which I am most familiar and the place which could bear the brunt both good and bad of offshore oil drilling in the vicinity of Georges Bank.

Cape Cod is an area whose economy, $240 million annually, is heavily dependent upon the vacation/travel industry. This industry directly accounts for 60 percent, $140 million annually, of the area's economy and indirectly accounts for at least 25 percent more of the remainder. Our second home and retirement home construction industry is interrelated with tourism as are most retail and service facilities in the area. To a lesser degree, the cape derives income and employs people in the areas of sport and commercial fishing. These areas of business are almost totally dependent upon clean unpolluted water and unspoiled miles of ocean beaches.

On a statewide basis, tourism is estimated to be among the top four industries of the Commonwealth with spending in the billions of dollars annually.

What impact would a spill have on Cape Cod? What other impact would drilling have on Cape Cod? It seems to me we have several things to consider here. We must consider two potential accidents such as a spill at the drilling site and the possibility of a near-shore spill resulting from careless transfer practices.

Regarding the former, it has been suggested by expert interpretation of existing data there is only a 5-percent chance that an offshore spill on Georges Bank would cause oil to reach Cape Cod on its south and southwest shores. Hopefully, the technology required to minimize a major oil accident would be thoroughly investigated and stringent regulations be enforced to prevent such an occurrence. Thus, it would appear that a spill at an offshore drilling site may well have a minimal effect on the tourist economy of Cape Cod.

A near-shore spill would probably be of much more serious consequence. We have already witnessed the effects of such an accident and

the results are still with us today. I am referring here to the spill occurring in the Old Silver Beach area of Falmouth in 1969. More recently, August 1970, the peak of our tourist season, found several miles of the cape's southside beaches incurring an oil pollution problem. A headline appeared in the Monday, August 3, edition of the Boston Record American stating, "Sixty Mile Oil Slick Closes Cape Beaches to Bathers." This headline, though an exaggeration of fact, cost Cape Cod's economy several millions of dollars in business plus the costs of cleaning beaches, hotel facilities, furniture, rugs, and so on, when people tracked the oily substance indoors, clothing, and of course the necessary effort and expenditure in the media to overcome the adverse publicity.

We have suggested that every licensee taking petroleum products from the Massachusetts shore be required to post a bond. Such moneys might indemnify public agencies, political subdivisions, and private interests in the event of such an accident.

As I know you are aware, the cape is treasured by many as a recreational resource. It is within a day's drive of more than 50 million people. In fact, our year-round population of approximately 120,000 people swells during the summer months by some 3½ times while several millions of people annually visit this rather fragile spit of land. These people are attracted by the cape's most important natural resource—its rural charm and seashore. Consequently, the cape's economy is dependent upon the quality of its coastal environment.

Any development of onshore facilities or pipelines for oil transfer across Cape Cod would seem to me to be totally incompatible with the area's economic situation. The detrimental effects of such a facility would, under every conceivable circumstance outweigh any economic benefits derived from the employment of local people.

Also, as is pointed out by the Association for the Preservation of Cape Cod, the cape is a unique region with respect to its fresh water supply. The entire area depends upon a single ground water aquifer supplied by precipitation. Because ground water flows with ease through our sandy soil and can readily be drawn toward large supply wells, an onshore accident could result in the destruction of a major portion of our fresh water supply.

There is usually a building boom which accompanies the discovery of oil in an area but Cape Cod may not be able to physically handle such growth. There are questions of land availability, fresh water supply, and sewage disposal which must be considered. Also, over development could endanger the tourist economy of our area.

Perhaps, however, we could make use of the land which is available at Otis Air Force Base and create research and technological facilities which would work in concert with the oil industry and most importantly create new jobs in the area which might be compatible with a tourist-based economy.

In this same vein we must take advantage of the educational and scientific resource located at Woods Hole. We have enjoyed a good rapport with the scientific community at these institutions and suggest it be expanded and included in all aspects of any project.

Thus far I have addressed my comments essentially toward the economic and environmental impact of offshore oil drilling but my remarks must include another aspect of economic impact. During

the past several months, we in New England have felt, in a detrimental way, the economic effects of an energy problem. During the winter and spring of this year, our weekend and convention business, the lifeblood of our offshore economy, trailed off considerably This raised considerable apprehension for the forthcoming summer season.

We know that nearly 85 percent of our visitors use automobile transportation and that there is almost no local public transportation throughout the area. Thus, without adequate gasoline supplies we would have an equally serious economic impact on Cape Cod. I guess what I'm really saying is we could be damned if we do and damned if we don't.

Since vacation/travel can no longer be considered a luxury but rather a social and economic necessity, especially to those who earn their livelihood from it, we must encourage its continuation and hopefully preserve an economy. Also, Massachusetts and New England's manufacturing industry has been penalized by the high costs of fuel creating a high cost of living and a steadily diminishing number of manufacturing job opportunities. This too has adversely affected the vacation/travel segment of spending.

I believe that with new technology, the setting up of proper controls and safeguards, the establishment of an insurance program that would indemnify the people of the cape should an accident result, we have almost no alternative than to make use of the resource should it be available.

Again, I thank you for the opportunity to make my views known, and I hope that may comments have been helpful.

Senator KENNEDY. Thank you very much. I think that we ought to have some major assessment of these issues to make sure they are compatible with good coastal zone management. I would like to find out whether we have adequate land and water resources, to accommodate the facilities which would be necessary for this kind of development off the coast.

Mr. FRUCCI. I think it would be not only necessary, but, in our own area, I wonder if it would be practical. As I stated, we are a rather fragile spit of land with which you are quite familiar, and I just don't think we could handle some of the offshoots of offshore drilling within the cape itself.

However, there are other nearby areas that might well be able to handle it. I can't speak for them.

Senator KENNEDY. All of that should be considered, should it not?

Mr. FRUCCI. Yes. Absolutely. Yes, sir.

Senator KENNEDY. What you are talking about is that those factors ought to be considered in planning for the development and granting of leases. I gather that from your testimony.

Mr. FRUCCI. That is correct.

Senator KENNEDY. For the reasons that you have outlined here.

Mr. FRUCCI. One of the prime difficulties is that we are a high unemployment area and, of course, very seasonably oriented, and yet we have to weigh the benefits as to whether or not we want the extra job opportunities and so on. We have to weigh all of these things, as you point out, before making our decision.

Senator KENNEDY. But basically you have come down in favor of it.

Mr. FRUCCI. Yes, sir, as long as certain conditions can be met.

[The prepared statement of Michael J. Frucci and supplemental material follows:]

TESTIMONY PRESENTED TO THE SENATE SUBCOMMITTEE ON ADMINISTRATIVE PRACTICES AND PROCEDURES, IN CONJUNCTION WITH THE PRIVATE SECTOR NATIONAL OCEAN POLICY STUDY GROUP, AUGUST 5, 1974

(By Michael J. Frucci, Executive Secretary,
Cape Cod Chamber of Commerce)

Senator Kennedy, members of the Committee, it is indeed a pleasure and a privilege for me to appear before you this morning. Though I am to represent the resort industry of the Commonwealth of Massachusetts, I hope you will forgive me for placing a considerable emphasis on Cape Cod—the area with which I am most familiar and the place which could bear the brunt both good and bad of off-shore oil drilling in the vicinity of George's Bank.

Cape Cod is an area whose economy is heavily dependent upon the vacation/travel industry. This industry directly accounts for 60% of the area's economy and indirectly accounts for at least 25% more of the remainder. Our second-home and retirement-home construction industry is interrelated as are most retail and service facilities with Tourism. To a lesser degree, the Cape derives income and employs people in the areas of sport and commercial fishing. These areas of business are almost totally dependent upon clean unpolluted water and unspoiled miles of ocean beaches.

On a State-wide basis, Tourism is estimated to be among the top four industries of the Commonwealth with spending in the billions of dollars annually.

What impact would a "spill" have on Cape Cod? What other impact would drilling have on Cape Cod? It seems to me we have several things to consider here. We must consider two potential accidents such as a spill at the drilling site and the possibility of a near-shore spill resulting from careless transfer practices.

Regarding the former, it has been suggested by expert interpretation of existing data there is only a 5% chance that an off-shore spill on George's Bank would cause oil to reach Cape Cod on its South and Southwest shores. Hopefully, the technology required to minimize a major oil accident would be thoroughly investigated and stringent regulations be enforced to prevent such an occurrence. Thus, it would appear that a spill at an off-shore drilling site may well have a minima effect on the tourist economy of Cape Cod.

A near-shore spill would probably be of much more serious consequence. Wel have already witnessed the effects of such an accident and the results are still with us today. I am referring here to the spill occurring in the Old Silver Beach area of Falmouth in 1969.* [Note App. A & B] More recently, August, 1970, the peak of our Tourist season, found several miles of the Cape's Southside beaches incurring an oil pollution problem.

A headline appeared in the Monday, August 3, edition of the Boston Record American stating "60-Mile Oil Slick Closes Cape Beaches To Bathers." [Note App. C.] This headline, though an exaggeration of fact, cost Cape Cod's economy several millions of dollars in business plus the costs of cleaning beaches, hotel rugs and furniture when people tracked the oily substance indoors, clothing, and of course the necessary effort and expenditure in the media to overcome the adverse publicity.

We have suggested that every licensee taking petroleum products from the Massachusetts' Shore be required to post a bond. Such monies might indemnify public agencies, political subdivisions and private interests in the event of an accident.

As I know you are aware, the Cape is treasured by many as a recreational resource. It is within a day's drive of more than 50 million people. In fact, our year round population of about 120M people swells during the Summer months by 3½ times while several millions of people annually visit this rather fragile spit of land. These people are attracted by the Cape's most important natural resource—its rural charm and seashore. Consequently, the Cape's economy is dependent upon the quality of its coastal environment.

Any development of on-shore facilities or pipelines for oil transfer across Cape Cod would seem to me to be totally incompatible with the area's economic situation. The detrimental effects of such a facility would, under every conceivable circumstance outweigh any economic benefits derived from the employment of local people.

Also, as is pointed out by the Association for the Preservation of Cape Cod, the Cape is a unique region with respect to its fresh water supply. The entire area depends upon a single ground-water aquifer supplied by precipitation. Because ground water flows with ease through our sandy soil and can readily be drawn towards large supply wells, an on-shore accident could result in the destruction of a portion of our fresh water supply.

There is usually a building boom which accompanies the discovery of oil in an area but Cape Cod may not be able to physically handle such growth. There are questions of land availability, fresh water supply and sewage disposal to be considered. Also, over-development could endanger the Tourist economy of the area.

Perhaps, however, we could make use of the land which is available at Otis Air Force Base and create research and technological facilities which would work in concert with the oil industry and most importantly create new jobs in the area which would be compatible with a Tourist based economy.

In this same vein we must take advantage of the educational and scientific resource located at Woods Hole. We have enjoyed a good rapport with the scientific community at these institutions and suggest it be expanded and included in all aspects of any project.

Thus far I have addressed my comments essentially towards the economic and environmental impact of offshore oil drilling but my remarks must include another aspect of economic impact. During the past several months, we in New England have felt, in a detrimental way, the economic effects of an energy problem. During the Winter and Spring of this year, our week-end and convention business—the life blood of our off-season economy—trailed off considerably. This raised considerable apprehension for the forthcoming Summer season.

We know that 85% of our visitors use automobile transportation and that there is almost no local public transportation throughout the area. Thus, without adequate gasoline supplies we would have an equally serious economic impact on Cape Cod. I guess what I'm really saying is we could be damned if we do and damned if we don't.

Since Vacation/Travel can no longer be considered a luxury but rather a social and economic necessity, especially to those who earn their livelihood from it, we must encourage its continuation to preserve an economy. Also, Massachusetts and New England's manufacturing industry has been penalized by the high costs of fuel creating a high cost of living and a steadily diminishing number of manufacturing job opportunities. This too has adversely affected the Vacation/Travel segment of spending.

I believe that with new technology; the setting-up of proper controls and safeguards; the establishment of an insurance program that would indemnify the people of the Cape should an accident result; we have almost no alternative than to make use of the resource should it be available. [Note App. D, E, F.]

Again, I thank you for the opportunity to make my views known and hope that my comments have been helpful. I would be most willing to attempt to answer any questions the Committee may have.

Appendix A

[memorandum report]

August 27, 1969.

By: Donald L. Corey.
Subject: Oil pollution—Old Silver Beach, Falmouth, Mass.

On August 17, 1969, Mr. Alfred Ferullo of Mass. Division of Water Pollution Control was advised by Lt. McWilliams, U.S. Coast Guard Base, Woods Hole, that an oil spill was reported on Old Silver Beach, Falmouth. The oil was first reported by Mr. Battles, owner of the SeaCrest Motel. At the time it was first noticed and reported, the oil was already on the beach. The oil came in on high tide (approx. 1130) and was deposited in a 4–5 foot wide band at the high tide mark. The oil extended up the beach from Herring Creek for about 1,000 yards; there was no oil south of Herring Creek.

On Monday morning, August 18, 1969, Thomas C. McMahon and the writer accompanied Capt. Horne and Lt. McWilliams of the Coast Guard Base in inspecting the area. No oil had come ashore after the high tide on Sunday. Private beach owners and the Town of Falmouth hired a front loader to scrape up the oil and bury it above the high tide mark. The oil was heavy, black material which did not penetrate the sand.

The Corps of Engineers was then contacted to determine what ships transited the Cape Cod Canal which might have discharged the oil in Buzzards Bay. On Saturday night, August 16, the MORANIA ABACO (U.S.) departed the canal at 2220 westbound from Portland, Me., to New York City; the ship was in asphalt service, but transited in ballast. On Sunday morning, August 17, the RASENFELS (Ce) transited eastbound for Boston with general cargo; the ship carried heavy fuel for shipboard heating. No other vessels going through the canal during this period appeared to have any black oil on board. The writer asked the assistance of Mr. Thomas Devine, F.W.P.C.A., in obtaining oil samples from the above vessels to compare with oil taken off the beach.

On Tuesday, August 19, CDR Drinkwater of the U.S. Coast Guard Base, Woods Hole, reported that the high tide (at approx. (1300) had brought in more oil. This oil was deposited in the same area and appeared to be more of the same type of material. Patrols by Coast Guard vessels since that time have not detected any additional oil.

Based on a check by William Marhoffer and Brian Jeans of the Southeastern Regional office with Woods Hole Oceanographic Institute, the oil could have come all the way up Buzzards Bay. The prevailing wind, the tidal patterns and the fact that the oil patches had separated and hit Old Silver Beach on two different days would tend to support this conclusion. A check with New Bedford terminals indicated that no black oil moved into that port during the week prior to the spill.

Unless the lab analyses of oil samples from the RASENFELS or MORANIA ABACO can be identified with the oil taken from the beach, it appears probable that the spill occurred west of Massachusetts waters and was carried up Buzzards Bay. Identification of the source would not be feasible if such is the case.

Appendix B

The Commonwealth of Massachusetts,
Water Resources Commission,
State Office Building, Government Center,
Boston, Mass., January 16, 1970.

Mr. Thomas J. Cody, Jr.,
President, Bemol Corp.,
P.O. Box 11, Newton, Mass.

Dear Mr. Cody: Your letter of January 2, 1970 has been forwarded to my attention. I share your concern regarding recurrent oil contamination and other pollution of our coastal beaches. Action is presently being taken at the State level to prevent and clean up oil spills, insofar as funds and personnel are available. The following information summarizes some of the features of our oil pollution abatement program.

The oil pollution law passed late in 1968 (Chapter 648) provided for inspection and licensing of all marine oil terminals in Massachusetts. Initial licensing was accomplished, and all terminals have been required to comply with certain standards to reduce spillage; in particular, all terminals are required to obtain and maintain booms that can be rigged immediately in case of spillage. We anticipate establishing even more stringent regulations as the need arises and as we gain authorization for more enforcement personnel.

Personnel from this Division investigate all reported incidents of oil pollution in Massachusetts. In the majority of cases, the person responsible for the pollution is identified and required to stop the spillage; if cleanup is required, the person is also responsible for costs of oil containment and removal. If the responsible party cannot be established or fails to take appropriate action, this Division is authorized (under the 1968 law) to spend up to $100,000 per year for oil pollution clean-up. While the amount authorized would not cover a major disaster, this provision represents a real landmark in comparison to any other Federal or state legislation enacted to date.

Responding to particular points raised in your letter to the State Chamber of Commerce, movement of vessels in international traffic is already controlled by the United States Coast Guard; a number of Federal, State and local agencies also have regulations affecting tanker operations from a safety and pollution standpoint. If an emergency arises in port, the United States Coast Guard and Port Harbor Master or Fire Department can order any actions deemed necessary in the situation.

As shortcomings in existing regulations and procedures become apparent, we are striving to correct them. For example, investigation revealed that the tug and oil barge that grounded in West Falmouth last September were below the size that is governed by Federal regulations concerning pilotage, licensing and navigational aids. We have therefore been working with the Attorney General and Federal agencies to extend more stringent regulations to all vessels with hazardous cargoes in Massachusetts waters; the matter is currently before the Attorney General, who is to determine whether additional State legislation is desirable or whether a test case of existing legislation will establish an appropriate precedent.

Your concern over potential mineral exploration in coastal areas is also shared by many people. A Division of Mineral Resources was recently created within the Department of Natural Resources in order to provide the central control over exploration which you recommend. That Division is currently being staffed.

Finally, a very large number of bills dealing with water pollution have been filed with the Massachusetts legislature for consideration in this session. A number of these are concerned specifically with oil pollution, including one which would place absolute liability on tanker owners for any pollution and damage caused by their vessels.

It is undeniable that measures for the prevention and control of oil pollution have lagged behind other technology in the oil industry. We are endeavoring to maintain an oil pollution abatement program which reflects the current state-of-the-art, and are receptive to well-conceived recommendations in this area. We would also welcome support for responsible pieces of legislation. In order to implement viable programs in oil pollution control and other areas, it should be apparent that we are dependent on increased appropriations to fund the measures which are enacted; the need for support in communicating to elected officials the commitment of Massachusetts citizens to adequately-funded pollution control programs is obvious.

I appreciate your concern and would be glad to cooperate in any pollution abatement program which you may undertake with the Massachusetts Chamber of Commerce and Cape Cod Chamber of Commerce.

Very truly yours,

THOMAS C. MCMAHON,
Director.

APPENDIX C

60-MILE OIL SLICK CLOSES CAPE BEACHES TO BATHERS

The worst oil pollution in years marred the white sands of bathing beaches along a 60-mile stretch of Cape Cod over the weekend and caused an angry reaction among tens of thousands of heat-weary bathers.

The oil, which rose to the surface just off the beaches, washed into various sections of the Cape from Chatham to Buzzards Bay.

Thomas McMahon, head of the state Water Pollution Control Division, said the oil is eight Bunker "C" or No. 6, both very heavy grades. The oil washed onto the beaches in blobs mixed with seaweed, making it impossible to determine how much oil is involved.

Gov. Sargent yesterday toured the areas for a first-hand inspection. He was accompanied by McMahon, Comdr. Arthur Brownell of the Dept. of Natural Resources, Coast Guard Comdr. Capt. Henry Campbell and Allen O'Connor, regional director of the U.S. Office of Emergency Preparedness.

Don Corey, spokesman for the Division of Water Pollution Control, said Sargent was trying to determine if other state agencies could be utilized in a cleanup operation. However, he said, the governor is keenly aware that the state has only $100,000 allocated to fight waterborne oil pollution.

Corey said there have been sightings of the oil on beaches for the past six weeks, but the public beaches were able to be cleaned. However, a heavy slick appeared Friday and it was too much to handle, he said.

A private contractor was hired Friday to rake in the thick, tar-like slick. It had improved yesterday, but bathers were warned it was risky to swim.

Corey offered several possible causes or sources of the pollution. "The most probable source is discharge in the shipping lanes south of New York and Providence, perhaps from tankers that have sunk. You can't be sure in a case like this.

* * * * * * *

APPENDIX D

JANUARY 5, 1972.

Hon. WILLIAM M. BULGER,
State House,
Boston, Mass.

DEAR SENATOR BULGER: I am aware that you are chairing a committee that will soon undertake hearings pertaining to off shore oil well drilling.

As I am certain you are aware, we in the Cape Cod area are most vitally interested both from a consumer point of view, and most especially the conceivable effects on our area's economy. We are extremely dependent upon tourism in our area, since it directly accounts for more than 60% of the area's economy, and thus anything that could conceivably damage that business is of vital importance.

I am certain that you are well aware of this situation and write only to remind you of what the possible effects might be should an accident occur.

Should I be able to offer any assistance to you and your committee, please do not hesitate to call upon me.

Yours very truly,

CAPE COD CHAMBER OF COMMERCE,
MICHAEL J. FRUCCI,
Executive Secretary.

THE COMMONWEALTH OF MASSACHUSETTS,
SENATE,
STATE HOUSE,
Boston, January 12, 1972.

Mr. MICHAEL F. FRUCCI,
Executive Secretary,
Cape Cod Chamber of Commerce,
Hyannis, Mass.

DEAR MR. FRUCCI: Thank you very much for your letter of January 5, 1972, indicating your interest in the offshore oil question. I am mindful of the environmental hazards which are present in any oil exploitation off the coast. Suffice it to say that I believe Cape Cod and its seashore is one of the Commonwealth's most valuable natural treasure. Any plan for the offshore waters must guarantee that this beautiful area shall never be imperiled.

I hope you will be able to attend our hearings, which will be convened in the State House on January 21, February 4, and February 18 at 10:00 a.m.

Sincerely,

WILLIAM M. BULGER,
Senator, Chairman, Special Legislative Commission on Marine Boundaries and Resources.

APPENDIX E

THE COMMONWEALTH OF MASSACHUSETTS,
EXECUTIVE DEPARTMENT,
STATE HOUSE,
Boston, January 14, 1972.

MICHAEL J. FRUCCI,
Executive Secretary, Cape Cod Chamber of Commerce, Mid-Cape Highway, Hyannis, Mass.

DEAR MR. FRUCCI: Thank you for your letter indicating your concern over possible oil leasing off the New England coast.

For your information, I am enclosing a copy of a letter I received from the Secretary of the Interior. You may be assured that our prime concern will not be with the possible oil leasing but with the potential environmental impact.

There is no doubt in my mind that this question must be resolved prior to any discussion of oil leasing off our New England coast.

Sincerely,

FRANCIS W. SARGENT,
Governor.

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., December 21, 1971.

Hon. FRANCIS W. SARGENT,
Governor of Massachusetts,
State House,
Boston, Mass.

DEAR GOVERNOR: You will recall that in the telegram to you dated November 4, I suggested a joint meeting of Atlantic Coast State Governors for the purpose of exchanging information dealing with the future potential of petroleum and natural gas in geologic formations beneath the seabed of the Outer Continental Shelf. Subsequent letters dated November 24 and December 9 to you from my Under Secretary transmitted my view that perhaps we had better hold this meeting sooner rather than later because of the public attention being given this issue.

I have set the meeting date at 10:00 a.m. on Tuesday, January 11, and the meeting place my Conference Room located on the fifth floor (Room 5160) of the Interior Building on C Street between 18th and 19th. Members of my staff will attend the meeting and I would hope that you feel free to bring as many members of your staff as you desire. Let me assure you that my prime purpose is to encourage a good exchange of information and views so that some course of action might be mutually acceptable in future months or years.

It seems to me that the public has unfortunately been given the wrong impression of our intention and has been led to believe erroneously that petroleum production is being planned along our eastern shoreline. I hope we can clarify the entire issue so as to permit a rational analysis of the OCS potential, the status of our knowledge, and the options facing the nation in future energy supply.

Sincerely,

ROGERS C. B. MORTON,
Secretary of the Interior.

JANUARY 5, 1972.

His Excellency FRANCIS W. SARGENT,
Governor of the Commonwealth,
State House,
Boston, Mass.

DEAR GOVERNOR SARGENT: I have recently read and heard about your forthcoming meeting with other New England Governors and the Secretary of the Department of Interior, relative to drilling for oil off the Mass. coast.

I, like many others, am certainly aware of the fuel oil shortage in the Northeast as well as its high cost. I am also aware of what any kind of spill or similar accident could mean to the economy of Cape Cod. Because of the tremendous import to the area's economy of tourism, as well as the remnants of our once great fishing industry, I feel that extra thought must be exercised here.

I am certain that you can recall both the bad publicity and ill effects suffered by the area only several years ago when globules of oil washed ashore in the Dennis, Harwich and Yarmouth areas.

We are vitally concerned with the prospects of off shore oil drilling and hope that you will keep us advised of any and all actions taken in this regard.

Yours very truly,

CAPE COD CHAMBER OF COMMERCE,
MICHAEL J. FRUCCI,
Executive Secretary.

APPENDIX F

FEBRUARY 20, 1969.

Congressman Hastings Keith (R-MASS.) today filed another bill in his continuing attempt to save Cape Cod from the same kind of massive oil spill which recently struck the Santa Barbara Channel.

First introduced in July, 1967, as the Marine Sanctuaries Study Act, the new Keith measure has been broadened to include stiff penalties for owners and operators of off-shore facilities and vessels which cause pollution.

"I fathered the sanctuary concept nearly two years ago," said Mr. Keith, a ranking Republican on the Merchant Marine and Fisheries Committee. "If Congress had passed my bill, the tragedy in Santa Barbara might have been avoided."

Twenty Congressmen later joined Mr. Keith in sponsoring his earlier bill. Senators Kennedy and Brooke gave it strong support and introduced identical measures in the Senate.

The idea even caught on in the Interior Department. One month after the Congressman introduced his bill to the House, an Assistant Secretary asked former Secretary Udall to designate the Santa Barbara Channel a sanctuary. Mr. Udall, unfortunately, declined.

"The purpose of my bill," Mr. Keith said, "is to save distinctive off-shore areas for sport and commercial fishing, preserve both wildlife and natural beauty, and permit scientific research and outdoor recreation."

A major feature of the bill places liability up to $10 million on the owners of vessels and off-shore rigs for costs incurred during the clean-up of the spills. Additionally, a two year moratorium would be imposed upon all off-shore industrial activity, including oil drilling and exploration, while a study is made to determine the most appropriate and most beneficial uses of coastal areas.

Commenting on the two year moratorium provision, Mr. Keith said, "The oil industry now has a free run and unlimited time to explore and exploit in the interest of its stockholders. Why should not the scientists, the conservationists and the representatives of coastal industries have a similar opportunity in the interest of the public.

Mr. Keith also announced that Mr. Robert McNeece of Chatham would go to Washington next week to testify before the Merchant Marine and Fisheries Committee in support of this legislation.

"Bob is secretary of the Cape Cod National Seashore Advisory Committee and a long-time champion of conservation," the Congressman explained. He is a most knowledgeable and effective spokesman for the people of Cape Cod.

Mr. Keith said that he hoped other constituents would voice their support by writing in favor of his bill. A show of strength by the people could help to win passage, he commented.

"It's plain that oil and water don't mix," Mr. Keith said, "so we'd better find a way for them to co-exist. It's time we have a rational plan for the development of our ocean frontiers."

Senator KENNEDY. Thank you very much.

Mr. Chadbourne, we want to welcome you. I have had the opportunity of working with you for a number of years on different matters which have affected industries in this State. You have appeared before various panels and have been a forceful spokeman for the AIM. We look forward to your testimony.

STATEMENT BY ROBERT A. CHADBOURNE, PRESIDENT, ASSOCIATED INDUSTRIES OF MASSACHUSETTS

Mr. CHADBOURNE. Thank you, Senator. My name is Robert A. Chadbourne, president of Associated Industries of Massachusetts. Our organization consists of some 2,500 member companies, each a manufacturer or industrial support firm in Massachusetts. Together they represent about 85 percent of the total manufacturing activity in the State. Individually these companies range from large national multicorporations to very small family owned machine shops.

Obviously, then, they have a very strong and direct interest in the availability of energy resources.

I have a more lengthy prepared statement, but I am not going to impose on your time this morning by reading fully. There are some basic points I should like to make.

First, I should say that my purpose today is to urge on behalf of AIM's membership that the State and Federal Governments assign very highest priority to the development of potential resources off our coastline. There is reason to believe that these resources hold the

promise in a very relatively short period of time of freeing New England from its long and crippling dependence on imported fuels. This could give us, at last, a parity of power costs with other industrial regions.

Senator KENNEDY. Let me see if I understand you correctly. That result, of course, is contingent upon leasing arrangements or agreements made that guarantee our State either a share of the bonus or a share of the royalty or a price advantage, does it not?

Mr. CHADBOURNE. Yes, it does.

Senator KENNEDY. Generally, it does not bring advantages unless we are able to make some kinds of agreements.

Mr. CHADBOURNE. I agree, Senator, and I hope to develop that in a couple of minutes.

Senator KENNEDY. Fine.

Mr. CHADBOURNE. As I indicated, I think this could give us, at last, a parity of power costs with other industrial regions. It could open up whole new areas of employment, and this is a critical concern to us right now because of our State's persistently high unemployment rate, and, as you know, it is running substantially above the national average.

Offshore drilling could assure us a security of fuel supply we have never had, and it could generate literally millions of dollars in new revenues to the benefit of every taxpayer in the Commonwealth. I think these are goals worth pursuing and without delay.

We have had some exciting growth in this region in the service industries and in tourism and in recreation, but Massachusetts remains fundamentally and will continue in the foreseeable future to be an industrial State. Manufacturing is the basis of our whole economy. I believe it is our best hope for economic growth and stability, but not if we cannot be assured of both adequate supplies of energy and at competitive prices.

We have done much in Massachusetts recently to combat industrial decline and job losses. For one thing, our legislature has enacted a series of promising incentives to business and industry. But all of this may well be meaningless if we can't close the growing gap we face between fuel and power costs in New England and such costs in other regions of the country.

This is nothing less, in my opinion, than a matter of economic survival. We are living with this gap now only because business has been relatively good and because other market factors are overriding these cost differentials to some extent, but this is only a short-term situation. These things, I think, are pretty well known, and I don't really mean to dwell on them too much, but simply stated they mean that competition between our industries and those elsewhere has been knocked seriously out of balance. Whatever technological marketing or labor skill advantages we held are now being wiped out by forces beyond our control.

Offshore drilling with its potential, I believe, offers us the chance to regain some of that control over our own economic destiny. Let me cite, as one example, just one specific industry in Massachusetts where fuel supply and price are critical and that is the important plastics industry. That industry in our State currently employs some 43,000 men and women in more than 700 individual companies. For the 25

years prior to the energy crisis, this industry grew at an average rate of 12 percent a year. Today it has abruptly leveled off.

It has a no-growth market because it has to compete with other uses for its petroleum-based raw materials. If we cannot establish some supply/demand equilibrium soon, we could see many of those 43,000 people in the unemployment line.

I am not here to suggest that my organization or that I personally have expertise in the technical or the legal aspects of offshore drilling, but for the general viewpoint of industry, I hope I can deal with one misconception that seems to abound with reference to drilling off the New England coast and that is the attitude that somehow we have a viable alternative in this matter that New England can afford to ignore or delay this opportunity to achieve an unprecedented degree of energy self-sufficiency and still survive economically in the difficult years ahead. A region that was literally energy starved last winter and remains tremendously vulnerable now simply does not have the luxury of alternatives. The question it seems to me we face is not whether we favor offshore oil and gas drilling. The only questions are how soon can we begin, what safeguards must we provide against possible environmental damage, and to what degree the Commonwealth itself can share in the revenues from leases and royalties.

I am not suggesting, of course, that we disregard environmental questions, but it seems to me in the true environmental sense that the decision to drill offshore in the Atlantic has already been made for us. Canada, for example, has leased in excess of 90 percent of its continental shelf. I understand, they have brought in something like 70 wells off Sable Island a relatively few miles from the Georges Bank basin which is one of the key areas, of course, under discussion at this hearing this morning. So drilling apparently is going ahead in the Atlantic whether we share in its benefits or not.

Environmentally, I think a couple of other points should also be noted. One, the Government's statistics indicate that the 11,000 or more tankers a year that move in and out of New England ports pose a much greater environmental threat than offshore drilling. Second, a major natural gas discovery close off our shores would be a tremendous environmental plus. This clean-burning fuel could reduce tremendously the air pollution problems of urban areas such as Boston and New York.

Another matter that I think should be dealt with and hopefully disposed of is the fear that offshore drilling or even a deep water terminal implies a refinery complex directly on our coastline. We all can agree that this would be environmentally undesirable, but it is also unnecessary because it has been shown that an inland refinery can be both economically feasible and environmentally compatible.

Finally, regarding the question of the environmental ramifications, I believe we have reached a point in terms of fuel supply and price where industry can no longer accept this sort of rhetoric that seems to invariably accompany any public discussion of offshore drilling. I am speaking of those who say they favor a development of offshore drilling and gas resources but always add the caveat that somehow they must be guaranteed 100 percent environmental protection. I think this is a meaningless hedge. If that same demand had been applied to aviation, no one would ever have flown in an airplane.

We need studies, to be sure, but you can also study something to death. We cannot legislate infallibility in this or in any other human endeavor in my opinion. We want safety, to be sure. We also want action, and, after all, it is only government that can act, that has the power and the legal initiative.

I believe that New England industry and consumers deserve a balanced approach to such public issues and deserve a chance to get free of this burden we have carried so many years as an importer of our basic fuels for heat and power as well as being captives, almost totally, of an international market.

For New England, this could be the most dramatic economic happening in decades. It could turn around our whole employment and industrial development picture. Beyond the basic benefits of security of supply and lower prices, there might also be numerous beneficial spinoffs in construction, and the building trades, in shipbuilding, in research and development, in instrumentation, in metal fabrication, trucking, and all of the services as well.

As a personal aside and in conclusion of my remarks, I should like to state that I am a native of Gloucester. I live on and love the seashore. Both my wife's family and my own have been men of the sea, involved in commercial fishing. I am personally as concerned about ocean pollution and damage to the coastline as anyone in the State, but I truly have no doubts about our ability to go forward without significant risk of either. I think the risks are much greater by far if we do not move ahead and especially if we do not take a balanced approach to our economic as well as our environmental needs.

Senator, we very much appreciate the opportunity of appearing before your committee.

Senator KENNEDY. Thank you very much, Mr. Chadbourne. That was a very valuable and helpful statement, and, of course, it assumes a number of different factors which I think we are going to have to take into account. As Dr. Devanney pointed out before, unless we are able to take advantage either of the bonus system or some kind of royalty system or some kind of payment system, then actually benefits to New England consumers are unlikely, even if substantial oil and gas deposits are found on Georges Bank. I gather from what he stated that in terms of prices to consumers per gallon of gasoline or home heating oil it really isn't going to make any difference at all unless we are able to get some kind of agreement, some kind of revenuesharing which the administration, to date, has shown little interest or willingness or desire to support. If we move ahead, that is going to be something that we, in the Congress, have to face.

Second, we have to recognize, as Dr. Devanney pointed out, that the threat to the fishing industry and marine life may not be significant. The Academy of Science in their review of the CEQ report points out, and I am reading from it:

> The daily operational discharges of oil and drilling muds and cuttings and other materials may result in sublethal or long-term ecological damage to an area, and in several recent studies significant concentrations of heavy metals were found near a platform. They enter the food web and could pose problems for human health. Because of concern about the impacts of long-term low level discharge of oil into the ocean, it is important that daily operations be carefully monitored.

And then it goes on:

> Potential impacts on commercial fisheries should be assessed before development begins.

On the one hand, we hear the voices of caution that before we count on this marvelous, glorious day where the potential oil resources that are off our coast are going to solve our energy problems here in New England we should recognize that the best estimate has been that by 1985 oil from Georges Bank will only meet one-thirtieth of total oil needs here in New England even if all the oil was pumped into New England.

That is the potential growth pattern. We have to consider various items, and that is just what we are attempting to do here. This is why it is important that we consider what we are going to do off the New England coast in terms of a total national energy policy.

For example, if we had an administrative decision or a congressional decision to put a tax on all automobiles or to require automobiles to get 30 or 35 miles to the gallon, we would save about 2½ million barrels of oil every day. Shouldn't that be considered along with the question of whether to develop oil and gas deposits off the coast of New England?

This is a vastly complex issue, and this is why we are trying to gather together the bits and pieces here this morning. I think you have made a very forceful statement for the industries of Massachusetts which have, I must say, experienced the most extraordinary kind of discrimination in oil prices. We were unable to get imported oil when it was cheap because of the oil import program during the sixties. We had to pay the higher domestic prices. Then, when the price for imported oil went up, they eliminated import quotas. The high cost of oil contributes to the cost of all our manufactured goods. So industries in Massachusetts have been hit both ways. This has been something that you have been concerned about; that I have been concerned about.

I can understand that our industries see the importance of getting access to reliable, fairly priced energy resources which they have not had in the past and which they need in order to compete with industries in parts of the country that have low priced secure sources. Therefore they want to resolve these problems, and hope that this will make a great deal of difference in terms of economic prosperity in one area.

I want to thank you very much for coming. I appreciate your remarks.

Mr. CHADBOURNE. Thank you, Senator.

[The prepared statement of Robert A. Chadbourne follows:]

JOINT PUBLIC HEARING—NATIONAL OCEAN POLICY STUDY AND U.S. SENATE SUBCOMMITTEE ON ADMINISTRATIVE PRACTICES, BOSTON, AUGUST 5, 1974

STATEMENT OF ROBERT A. CHADBOURNE, PRESIDENT, ASSOCIATED INDUSTRIES OF MASSACHUSETTS

Mr. Chairman: My name is Robert A. Chadbourne, president of Associated Industries of Massachusetts. Our organization consists of some 2,500 member companies, each a manufacturer or industrial support firm in Massachusetts. Together, they represent some 85 percent of the manufacturing activity in the state. Individually, they range from large national corporations to small family-owned machine shops.

AIM's members therefore, have a very strong and direct interest in the availability of energy resources. My purpose today is to urge, on their behalf, that the state and federal governments assign the very highest priority to the development of potential resources off our own coastline which hold the promise, in a relatively short period of time, of freeing New England from its long and crippling depend-

ence on imported fuels. This could give us, at last, a parity of power costs with other industrial regions, could open whole new areas of employment, could assure us a security of fuel supply and could generate literally millions of dollars in new revenues to the benefit of every taxpayer in the Commonwealth. These are goals that should be pursued without delay.

We are fortunate in Massachusetts to have a diverse economy, one that is experiencing exciting and encouraging growth in such attractive areas as medical technology, health care, education and the delivery of educational services, communications, insurance, finance and other essentially service oriented enterprises. And, of course, we traditionally count on significant economic contributions from tourism and recreation. All of these can be termed growth industries and all are important. The fact remains, however, that Massachusetts is primarily an industrial state. Manufacturing is our economic base. It provides the bulk of our jobs, generates much of our state and local revenues and offers our best hope in the foreseeable future for economic stability and growth. A fundamental need for industry, if we in fact are to attain that stability and growth, is the assurance of adequate supplies of energy at competitive prices.

There has been a great deal of discussion in the press and in government about the economic disadvantages we have experienced as a nation because of the energy crisis and our dependence on imported fuels. This dependence has meant a burden for consumers, devalued dollars and certainly a diminishing of our influence in world political and economic affairs. The impact on Massachusetts is even more direct and severe, both for individual consumers and for industry. We are not a state where industry is especially energy-intensive, but it is estimated, nonetheless, that some 25 percent of all industrial employment in Massachusetts is located in manufacturing operations where energy costs amount to 10 percent or more of the gross product. If those costs are doubled, as they have been in many instances, it is clear that jobs are threatened, that Massachusetts products lose their competitiveness in world markets and that our entire regional economy can be seriously injured.

Our survival as an industrial state, in fact, depends on closing the power cost gap we face in relation to industrial areas outside the New England region. We are facing it now because we have to, but we also happen to be experiencing a period when business is relatively good and when other market factors are overriding this differential to some extent, but this is only for the short term.

These things are obvious, I believe, so I don't wish to dwell on them. Suffice it to say that Massachusetts industry is 75 percent dependent on oil—most of it imported and much of it supplied by relatively small independent distributors. In other words, we are three times as dependent on oil as any other region of the country, regions that are close to domestic sources of fuel or have the advantage of being supplied historically and throughout the current energy crisis with cheaper fuels, such as natural gas. It should be noted in this context, that while residual oil prices in Massachusetts were tripling, the price of natural gas rose only a little more than 12 percent during the last heating season, while coal increased less than 19 percent in the same period. What this means, very simply, is that competition between our industries and those in other regions has been knocked seriously out of balance. Whatever technological, marketing or labor skill advantages we held are being neutralized or wiped out altogether by forces and events completely beyond our own control. I believe that off-shore drilling offers us the chance to regain some of that control over our own economic destiny.

This is a general statement, of course. Let me cite just one industrial specific, if you will, where security of supply is absolutely critical. I am speaking of the plastics industry in Massachusetts, one of our most important and one which currently employs some 43,000 men and women. For the 25 years prior to the energy crisis, this industry grew at an average rate of 12 percent a year. Today, because of its basic dependence on raw materials derived directly from a petroleum and natural gas product base, it has abruptly leveled off to a no-growth market economy. It has to compete for its feedstocks with other users, users much closer to the source. If supply-demand equilibrium is not established, the result could be very serious, indeed, for these 43,000 people and the more than 700 local companies making up the Massachusetts plastic industry complex.

I am not here to suggest that my organization or that I personally have expertise in the technical or legal aspects of offshore drilling, its total environmental considerations or even, specifically and statistically, its long range economic implications for New England. But that expertise is available, and much of it will be represented at this hearing. I intend to limit myself instead to a general statement, one that I hope and trust will assure this panel of Massachusetts

industry's vital stake in the issue at hand and one, perhaps, that can focus on some of the misconceptions about the potential development of oil and gas resources on the Georges Bank and in the Gulf of Maine.

The first such misconception, in my opinion, is the attitude that somehow we have a viable alternative in this matter . . . that the New England economy can ignore or delay this opportunity to achieve an unprecedented degree of energy self-sufficiency and yet survive economically in the difficult years ahead, when surely the rivalry and demand for energy resources will persist and intensify. We simply do not have the luxury of alternatives. For a state that was literally energy starved last winter and remains tremendously vulnerable, the question for Massachusetts cannot be whether or not we favor offshore oil and gas drilling. The only questions are how soon can we begin, what safeguards should we provide against possible environmental damage, and to what degree the Commonwealth itself can share in the revenues from leases and royalties.

Regarding the environmental question, clearly Massachusetts should insist on strict environmental standards and use of the latest technology. We have the advantage, in this regard, of learning from the experience of other regions and other countries. I understand that 13,000 or more wells have been drilled in the Gulf of Mexico alone, for example. There are other examples around the world. The state of Louisiana, a case in point, has had a long experience—some 25 years—with offshore drilling. Its safety record has been excellent, the environmental problems slight and the financial rewards substantial. Something over 50 percent of their state income is now derived from the petroleum and supporting industries. That drilling has been comparatively close inshore, also. In the Atlantic we are talking about drilling far out from shore—70 miles from Cape Cod, an area where both distance and favorable ocean and air currents provide a safety factor Louisiana does not enjoy.

Recent studies by both the National Council on Environmental Quality and MIT have shown there would be a great deal less risk off Cape Cod than might once have been imagined. But, in a sense—a true environmental sense—the decision to drill offshore in the Atlantic has already been made for us. Canada has leased in excess of 90 percent of its continental shelf for exploration. Off Sable Island, a relatively few miles from the Georges Bank Basin and an extension of this same oceanological feature, the Canadians have brought in a substantial number of producing wells. So drilling is going ahead in the North Atlantic, whether we share in its benefits or not. But, with specific regard to oil pollution, it should be noted that government statistics indicate offshore drilling is one of the least serious factors, accounting for only 2 percent of the total, while tankers account for some 28 percent. I needn't remind you of how dependent we are in New England on tanker-borne oil. Each year we have 11,000 or more oil tankers in and out of New England ports. That traffic obviously will have to increase in the years ahead unless we develop offshore resources and are able to pipe oil directly ashore.

There is one other major environmental question that should be disposed of. One of the aspects of offshore drilling that causes public concern, I believe, or for that matter one of the possible byproducts of a deepwater terminal, is the assumption that this must necessarily imply the construction of an oil refinery directly on our coastline. I think we can all agree that this would be environmentally undesirable. But it should also be understood that it is possible to locate such a facility 20 or 30 miles inland. This is both economically feasible and can be made environmental compatible.

Still regarding pollution, which seems to be the public's greatest concern when offshore drilling is mentioned, it has been estimated, after intensive geological studies, that in addition to billions of barrels of oil, there could be more than 200 trillion cubic feet of natural gas under the continental shelf along the Atlantic Coast, a good portion of it perhaps under Georges Bank. That is as much as our total proved reserve of natural gas. At the current consumption rate that is enough, I am told, to supply the entire nation's needs for eight to 10 years. And this is a fuel virtually free of sulfur and particulates, a fuel that does not pollute land or water and offers real hope for alleviating the air pollution problems of urban areas such as Boston. Right now we have a very limited supply of natural gas in New England. We are literally at the end of the pipeline, and most industrial companies are able to use this fuel only on an interruptable basis, with the home-heating market getting first preference. Even then we must supplement our supply in cold weather with LNG, which is comparatively very costly and must be shipped

great distances. Without it, of course, we would have been in deep trouble last winter.

With respect to offshore drilling, then, I think it is fair to say that rather than adding to our environmental problems, it holds the significant promise of substantially enhancing the environmental quality of New England.

Environmental considerations cannot be disregarded, but I sincerely believe they have been overplayed in the public mind and that they can be overcome with the technology presently available and with the regulatory experience that has been developed nationally and at the state level over the last three decades or more in dealing with offshore drilling in other areas.

Finally, there is one other point I should like to make with respect to this whole subject of environmental safeguards. We have reached a point—in terms of fuel supply and price—where industry can no longer accept the sort of political rhetoric that seems to invariably accompany any public discussion of offshore drilling in this area. I am speaking of political leaders who say they favor development of offshore oil and gas resources but always add the caveat that they must be guaranteed 100 percent environmental protection. This is a meaningless political hedge, an insult to public intelligence and, I think, an affront to every consumer and fuel user who has seen his electricity and heating bills go up so dramatically. If that same demand had been applied to aviation, no one would have ever flown in an airplane. You can keep calling for studies, but you also can study a subject to death. And I don't think we can legislate infallibility in this or any other undertaking. We want safety, but we also want action. And in this instance, after all, it is only government that can act, that has the power and legal initiative to set up the groundrules, prescribe the safeguards and ultimately give the go ahead to private industry to begin investing the millions of dollars in capital that such a project will require.

The beneficial impact on New England's economy of a major oil or gas discovery on our outer continental shelf could be tremendous, perhaps the single most dramatic development in recent times. It could turn around our whole employment and industrial development picture. We have always been an importer of energy in the past. Now we have a chance not only to become self-sufficient but to become an exporter to other states. The economic spin-offs, beyond the basic benefits of providing lower priced fuel for industry and homeowners, could be many. They could include new jobs in construction and the building trades, more work for New England shipyards, more opportunities in research and development, in instrumentation, metal fabrication, trucking, banking, service and many more.

Commercial quantities of gas or oil, or both, would mean that the flight of industry this region has experienced over the years and worked hard to offset could reverse. For, new industry naturally will move in this energy-conscious era to the source of assured and abundant energy. Massachusetts could cut down those long unemployment lines and welfare rolls and the burden they represent to employers and taxpayers. Beyond that, there is a reasonable assumption that Massachusetts could share directly in the revenues that such an operation would generate and could use those funds to stabilize and even reduce soaring tax rates.

The investment would be great, both in terms of the private capital required and in terms of the human resources, private and public, that would be expended to resolve the technical problems, to insure environmental safety and to provide the opportunity for economic success. But the rewards could be great also. And they would be shared by every resident of this state.

In summary, the negative alternative to offshore drilling could be a widening competitive gap between industry in this state and its rivals in other regions of this country and abroad. The consequences would be diminished economic growth and lost jobs, as well as lost tax revenue. We could continue to be a captive of market forces that make ours the highest energy costs in the nation, costs that impact not only on industry but on every motorist, homeowner and energy consumer.

Environmentally, the evidence is that as a region we run greater shoreline and ocean pollution risks from the heavy tanker traffic we now must rely upon. An offshore gas find, on the other hand, could provide us with vast quantities of environmental clean fuel.

Politically, we must balance our needs. We want a clean environment but we also want fuel to heat our homes and run our industries. We can have both. Well, at least, we could if the resources are there off our coast. I think it is imperative that we find out.

As a personal aside, I should like to say that I am a native of Gloucester. I live on and love the seashore. Both my wife's family and mine have been men of the sea, involved in commercial fishing. I am personally as concerned about ocean pollution and damage to coastline as anyone, but I have no doubts about our ability to go forward without significant risk of either. The risks are greater, certainly, if we do not move ahead and if we do not take a balanced approach to our economic as well as our environmental needs.

Thank you.

Senator KENNEDY. The next panel will discuss the environmental issues associated with the development of oil and gas resources. Barbara Heller, of the Environmental Policy Center, will show us some slides on what happened in the North Sea; Bostwick Ketchum, an eminent biologist from Woods Hole, will discuss the present state of our knowledge with regard to the effect of oil on the marine environment. We will also hear from Paul Swatek of the New England Sierra Club; Norman Faramelli of the Massachusetts Oil Coalition; and Barbara Fegan of the Association for the Preservation of Cape Cod.

STATEMENT BY DR. BOSTWICK KETCHUM, WOODS HOLE OCEANOGRAPHIC INSTITUTION

Dr. KETCHUM. Senator, Barbara Heller has asked if I will take the floor first. I don't know whether she expects me to lay the foundation for some of the slides that she plans to show or not.

I am Bostwick Ketchum. I have been an ecologist all of my life and involved in oceanographic studies.

I would like to discuss primarily the toxicity of oil, but first I would like to put the problem that is before us today into somewhat of a perspective in terms of the total marine pollution by oil.

The National Academy had a study just a little over a year ago and carefully worked out the total oil contamination of the sea, which turned out to be an input of about 6¼ million metric tons annually. Out of this, almost 60 percent comes from river runoff, tanker operations, urban runoff, and waste disposal. Another 36 percent comes from other ship operations, via the atmosphere from the uncombusted gases that escape from our cars and machinery, from natural seeps into the environment, and from accidents by tankers and other ships which receive large headlines but actually account for only 5 percent of this total amount of oil reaching the sea.

So that the questions that we are considering today account for the remaining 4.8 percent of the total oil reaching the sea, namely, the combination of coastal refineries, which account for 3.2 percent of oil pollution, and offshore production which accounts for 1.6 percent of the total oil pollution of the ocean.

There has been a lot of conflicting evidence presented concerning the toxicity of oil to marine organisms. As you have already mentioned, this is a complex problem, and this is another one of the complexities of it.

In the first place, crude oil consists of many thousands of different compounds, some of which are the so-called heavy compounds—these are the ones that ultimately produce the tarballs which float on the surface of the sea and pollute our beaches. The lighter factions, pri-

marily the aromatic compounds, are the most toxic to marine organisms. They are also the most soluble in sea water and the most volatile. Depending on how you play the game of statistics, if these evaporate, they probably do not affect the marine environment very much; if they become dissolved, they do affect it considerably.

In contrast to the crude oil, the refined oils contain a higher proportion of these toxic aromatic compounds, and, consequently, for a given volume of release, they have a much greater impact upon the marine organisms in the environment. This is one of the reasons for the differences in results say from the East Falmouth oil spill, which has been referred to, and the Santa Barbara spill. East Falmouth's spill was No. 2 fuel oil and the Santa Barbara spill was a crude oil.

Actually very few complete studies have been made of any severe pollution of the marine environment with oil. It is amazing that of 120-odd oil spills that we investigated a year ago, there had only been six studies that were published and could be evaluated on the basis of their scientific competence. The oil companies assure us that they have many, many more studies, but until these are published, one cannot judge and evaluate them. Among the ones that have been published extensively are the spill at Falmouth, the spill at Tampico Bay in California, both of which were light fuel oils. The spill at Chedabucto Bay in Nova Scotia consisted of bunker C oil which contaminated 100 miles of beach; and mostly their study involved means and methods of cleanup. The Santa Barbara blowout, was a crude oil and had relatively little ecological effect; some smothering of attached organisms on the shore, and no effect on the zooplankton and the fishes in the area. However, no benthic studies were involved in that investigation.

I would like to give a little of the history of the Falmouth oil spill, which I am sure that you know about but perhaps not everybody in the audience does. This happened in September 1969, nearly 5 years ago now. Immediately after the spill there was almost complete mortality of the organisms, but this was followed fairly quickly, within a month or so, by an invasion of what biologists like to call opportunistic species. These are species which are resistant to the pollution; and without the competition from other species that ordinarily lived there, they were able to make a very good living by this elimination of their competition.

However, the shell fishing in this area was eliminated locally for a period of 3 years, and then it was opened for the bay scallops which, as you know, is a 1-year crop. It recycles annually. Some of the shellfish that still exist in that area have identifiable fractions of the originally spilled oil still incorporated in their tissues.

Most importantly the oil was incorporated in the sediments to depths as great as 40 feet, and this has subsequently been released in the storms causing repeated impacts on the environment. As Dr. Devanney mentioned, the possibility of oil entrapment in sediments and essentially its preservation there is one of the hazards that we must consider in offshore developments.

Slow recovery is now apparent but it is far from being complete, even 5 years after the date of the spill.

In terms of an offshore oil field operation, as I mentioned previously, this at present produces about 1.6 percent of the total oil pollution

that the oceans are subjected to. These include chronic continuous release of drilling muds on which there is a limitation of 50 parts per million of oil in the released material and also occasional accidental spills, as Devanney has already mentioned.

In my opinion there is a very clear need for regulation and control of offshore oil development. I think that the records do show that this can be done without serious damage to the fisheries. Certainly in Louisiana the fish production has kept relatively constant over the last 40 years, and there are far more extensive oil fields in the offshore waters of Louisiana than we anticipate in the Georges Bank region.

This is not to say that the characteristics of the fisheries in Louisiana have not changed. They have changed. But it is extremely difficult to tie a change to a specific source of pollutant. As we all know and understand, the fisheries on Georges Bank without oil pollution have also changed drastically in the same period of time, largely because of overfishing.

So in my opinion there is a need for very careful control of operations. In my opinion, if you accept the fact that we in New England need a fixed amount of oil, there is greater danger of bringing it in with tankers and by tanker operation than there is by exploration, drilling, and production in the Georges Bank area.

As Dr. Devanney pointed out very clearly, the closer to shore the spill is, the greater the hazard, not only to the marine organisms in the environment but also the greater the hazard of pollution to the beaches and the loss of economic advantage as a result of tourism.

Thank you, I appreciate greatly the opportunity to make this brief statement before this hearing.

Senator KENNEDY. Doctor, I want to, of course, thank you very much for coming down from Vermont for this hearing. I understand there is illness in your family, so we particularly appreciate the special effort you made.

Are you satisfied that there are, given the earlier part of your testimony, sufficient studies now which are available to enable us to evaluate the environmental impact of offshore drilling on fisheries? Do you think that information is available at the present time? How much more information do we really need?

Dr. KETCHUM. It is always dangerous to ask a scientist if we know enough about any question because we never really do and we never will know all of the answers obviously.

I had been forewarned that you would be interested in a review of research needs in this general area, and I have listed six major headings which I consider need additional investigation. The first of these includes general studies of toxicity. I mentioned that there were innumerable types of compounds in a crude oil, and we need to know the specific toxicity of the various parts.

We know very little about persistence of oil in the environment. The East Falmouth study is one of the best, but very few of the studies have been carried on for a long enough time to evaluate complete recovery. When the oil gets into the sediments, it is apparently quite stable. If it gets into a marsh, it is quite stable. So we need studies on the persistence of oil in the environment.

We need studies of the rate of recovery of the ecosystem, both the short-term recovery, which could be the invasion by opportunistic

species, but also the long-term recovery which means reestablishment of the original total population and the original age structure of that population.

In the chemical field I think there is a need for chemical studies of the fingerprinting of oil, as it is called colloquially. The natural oils contain different proportions of different compounds, and additions to a tanker could be made to permit identification. One of the reasons I think that this is important is that the London Convention on the Prevention of Pollution of the Sea by Oil is rather specific in saying that you have to be there and see the discharge actually taking place. If we could identify chemically that this particular patch of oil came from this particular tanker, I think we would be a long way ahead in controlling tanker pollution of the sea which is a very important part of the problem.

I think we need to continue studies to determine the amounts and distribution of oil in the environment. It is very clear that oil pollution has increased over the last few decades, but we really don't have good information of 30 years ago to compare with today's observations. We should have continuous monitoring of this problem so that we can evaluate trends in the future.

And finally, I think there are needs for physical studies on the spreading of oil on the surface of the ocean on the solubility of oil in the water and on the rate of evaporation of the oil and the changes produced after it is released in the environment.

Senator KENNEDY. Now, should those studies all take place prior to the time of leasing or drilling?

Dr. KETCHUM. I do not think that is necessary. I think that this is a continuing program. It would be a long-range program, and essentially if one found out in the long run that some of the present fears about oil pollution are unfounded, the regulations might be relaxed a little bit. But I think we should start with adequate regulations to prevent and control oil pollution, insofar as possible.

Senator KENNEDY. The National Science Foundation in fiscal year 1975 will be spending about $2 million on research on the impact of oil on the environment. Do you think that is a grossly inadequate figure given the issues or questions that you have mentioned here that are yet to be resolved?

Dr. KETCHUM. Yes, I think it is inadequate. Certainly it would not be adequate to do one of these, namely the amount and distribution of oil in the present environment. $2 to $4 million would not do very much in that regard even on the basis of one ocean or one part of an ocean let alone on the basis of a global evaluation of this problem.

Senator KENNEDY. Which areas of marine research do you think are the areas of greatest need that we ought to be looking into?

Dr. KETCHUM. You are talking now of basic research rather than the practical problems of solving some of the oil pollution problems. I think these are different. In terms of basic research, I think what we need to do is to study more intensively the entire ecosystem and the way it is interrelated. We know that one small change sometimes can cascade into a major change in the species that inhabit a given ecosystem. Sometimes a small change makes very little difference.

Dr. Devanney mentioned a small percentage of larval kill. It would be impossible to predict that this would have any effect on the adult population because the natural fluctuations in larval survival are very large. On the other hand, if an essential food source for a particular species is eliminated, it could well have a very critical effect on that species.

So I think in the basic research context, the ecosystem approach is a critical and an essential one.

Senator KENNEDY. What about in other areas?

Dr. KETCHUM. Well, I have listed those six specifics that I think need further investigation.

Senator KENNEDY. Just before we go ahead, Mr. Knecht, you are with NOAA. Is NOAA planning to do these studies now or any of the studies that have been identified?

Mr. KNECHT. Well, some of them are underway, Senator, as part of the national marine fisheries program. NOAA has a program of studies of the effect of oil on marine organisms. Through the sea grant program also administered by the agency I represent, there are additional studies underway that are related to some of the problems that Dr. Ketchum mentioned. So there is an ongoing program. Whether it is enough should be the question. I personally agree with you that there ought to be more research in this area.

Senator KENNEDY. Perhaps you can tell us whether you intend to do anything in the other areas that have been indicated by Dr. Ketchum.

Mr. KNECHT. We could sumbit that to you and we will.

[The information follows:]

U.S. DEPARTMENT OF COMMERCE,
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION,
Rockville, Md., March 5, 1975.

Ms. ANNE STRAUSS,
Office of Senator Edward Kennedy,
U.S. Senate, Washington, D.C.

DEAR MS. STRAUSS: The enclosed information is for the August 5, 1974 hearing record (page 66 line 2).

The NOAA projects are grouped according to the six investigational areas identified by Dr. Ketchum in the testimony just prior to the request of Mr. Knecht.

(11) General studies of toxicity—page 61 lines 19 and 20.
(21) Rate of recovery of the ecosystem—page 62 lines 6 and 7.
(31) Chemical studies of the fingerprinting of oil—page 62 lines 12 and 13.
(41) Amounts and distribution in the environment—page 63, line 1.
(51) Continuous monitoring—page 63 line 5.
(61) Physical studies on spread, etc.—page 63, lines 7–11.

FISCAL YEAR 1975

I. GENERAL STUDIES OF TOXICITY

National Marine Fisheries Service

1. Determination of acute and chronic effects of Prudhoe Bay crude oil, $160,100.
2. Determination of acute and chronic effects of Cook Inlet crude oil, $109,300.
3. Tolerance of marine organism to crude oil and petroleum products, $135,000.
4. Physiological effects of petroleum California species, $105,000.

Sea grant

5. Effects of mixed petroleum hydrocarbon in Marine Fisheries, WHOI, $90,000.

II. RATE OF RECOVERY OF THE ECOSYSTEM

Sea grant

1. Chemical stress of long-term crude oil contamination in Louisiana marshes, $18,884.

III. CHEMICAL STUDIES OF THE FINGERPRINTING OF OIL

None *per se*, however, some analytical method development and compound identification work is included in each of the studies listed under other areas of concern.

IV. AMOUNTS AND DISTRIBUTION IN THE ENVIRONMENT

Sea grant

1. Oil and tar seeps on the shelf off Southern California, USC, $29,463.
2. Source, transport and fate of petroleum hydrocarbon in marine effluent University of Rhode Island, $19,739.

National Marine Fisheries Service

3. Petroleum hydrocarbon concentration in marine organism and various parts of their bodies, $150,000.

V. CONTINUOUS MONITORING

(Note: This must include the baseline surveys)

Sea grant

1. Identification and monitoring oil spills University of Rhode Island, $13,598.

National Marine Fisheries Service

2. Intertidal biological baseline of Gulf of Alaska, $125,000.
3. Monitoring construction of Alaskan pipeline-effect on anadromous fish runs, $44,400.
4. Intertidal population surveys of Port Valdez prior to pipeline operation, $89,800.
5. Faunal relationship to oil in Gulf of Mexico, $87,400.

VI. PHYSICAL STUDIES ON SPREAD

No studies are presently underway. One Sea Grant Study is not directly applicable to one of the above categories which is:

Resolution of the oil spill transport controversy—MIT, $30,400.

Total expenditures for Fiscal Year 1975 are $1,177,684.

We will be glad to supply any additional information.

Sincerely,

ROBERT R. KIFER,
Marine Sanctuary Coordinator,
Office of Coastal Zone Management.

Senator KENNEDY. Will you stay with us or do you have to leave?

Dr. KETCHUM. I will stay with you.

Senator KENNEDY. Good, thank you.

STATEMENT BY BARBARA HELLER, ENVIRONMENTAL POLICY CENTER

Ms. HELLER. Thank you, Senator. I certainly appreciate the opportunity to appear here today.

Before getting into the slides, I would like to emphasize a few things that I think we should all keep in mind while we are going through the slides. First, that we realize the magnitude of the many proposals which we are facing in New England.

OCS development on Georges Bank is one of several kinds of industrial proposals for offshore. Most of these will be accompanied, if they do go forward, by heavy industrial development.

OCS and superport development mean refineries, petrochemical plants, tank farms, ship repair yards, pipeline storage facilities, perhaps

platform fabrication facilities like the one which has been proposed for the coast of Virginia.

Offshore sand and gravel mining commercially has been proposed for the offshore in the Northeast. This again means repair yards, storage facilities, transportation facilities, more barges plying our waters, desalinization plants for the sand and gravel since it cannot be used for most commercial purposes until it has been desalted.

There are proposals for deep-sea mineral mining, not particularly for New England, but for other parts of the ocean. Again, heavy industrial development.

Let's keep in mind also, something which has already been brought out here today: that these heavy industrial facilities will be working in waters that have traditionally meant a great deal to New Englanders for their recreational value and for, most importantly, their food value. That, of course, means economic value as well, although it is a different kind of economic value than we usually hear about with regard to ocean development.

The Overseas Development Council report tells us that the annual worldwide fish catch was down in 1973 by about 10 percent from the high of 1970. The report suggests that, for the time being, the world is going to have to place its reliance on North American food supplies.

Depletion of fishing grounds has become a serious problem in many areas of the world. Worldwide famine is a frightening specter, but it becomes more vivid, a little closer every day as we read about the drought in the sub-Sahara region of Africa and the drought in our own Midwest.

Before we decide to develop, we must know, as I believe Dr. Ketchum said, not by guessing games but by detailed studies what the impacts of the various proposals facing us are, including marine impacts, biological impacts, economic impacts, and social impacts.

We heard from Mr. Chadbourne that New England cannot afford to ignore the opportunity for OCS drilling. I sincerely believe that New England cannot afford to go ahead without realizing what all of the impacts will be.

And now if we could get into the slides. These are a series of slides showing industrial development in other parts of this country and other parts of the world. Some are from the Gulf of Mexico and some from the North Sea.

The first four slides are rather spectacular, but lest we forget, these are some of the better known accidents in the gulf. This is the platform blowout on the Shell facility in 1971. Next slide, please.

This is the same platform after 2 months.

Next slide, please.

This is the Chevron blowout again in the gulf in 1970.

Next slide.

This is the boom which was used to try and clean up some of that Chevron oil. These booms are notoriously ineffective. They are completely ineffective in seas over 5 feet or currents over 2 knots. The Georges Bank study by Dr. Devanney and his colleagues said that it is essentially useless to try and clean up a spill of this magnitude out on Georges Bank because of the high seas.

Next slide, please.

Here I would like to emphasize again the industrial development. I cannot understand how this could not interfere with the mechanics

of fishing. There are many miles of structures between the wells and so many wells that even if there were no pollution from the equipment, it is simply dangerous for fishermen to congregate around the heavy industrial equipment.

These are platforms and a tank farm from the air.

Next slide, please.

Senator KENNEDY. What are those little dots? Are those boats?

Ms. HELLER. Some of them are boats and some of them are oil barges, equipment boats.

Senator KENNEDY. Those cannot all be boats, all those little spots?

Ms. HELLER. Some of them are oil facilities. The next slide is a closeup of one of these facilities. This is a tank farm and platform.

Next slide, please.

Now, this is a barge, again down in the gulf.

Senator KENNEDY. How deep is the water there?

Ms. HELLER. I do not know that.

Next slide, please.

This is a shrimp trawler moving through a slick. I was talking to some oystermen from Louisiana a few months ago across the hall from your office in Senator Johnstons office, and they told me that there is not a day that they go out, fly over the area or go out in their boats, that they do not see dozens of small slicks on their waters.

Next slide, please.

This is a slick from the air, not one of the huge notorious ones but still a big slick.

The next slide shows some of the impacts on the marshes in the area. This is a slick from the tank farm moving into one of the Louisiana marshes. It is the chronic pollution that most environmentalists are worried about and the landside impacts more than the massive spills and blowouts that we saw in the first few slides.

Next slide, please.

This is a healthy undisturbed Louisiana marsh. We have in New England nothing quite like this, but the next few slides show what the impacts on the marshes in Louisiana have been, and emphasizes why we have to keep and protect the marshes which are so vital to the marine ecosystem and to the fisheries. This is a channel that has been dredged for transporting platforms out into the gulf.

Next slide, please.

These are channels that have been cut for pipelines.

Next slide.

Again, more channelization. You noticed in the first slide of the marsh the random streams and random patterns. Now everything in certain areas has been completely straightened out for pipelines and canals.

Next slide, please.

This is an aerial view of an onshore support complex.

The next two slides are detailed views of the area. Again, note the heavy industrial appearance. These tank farms and complexes have to go somewhere near the offshore facilities.

Next slide, please.

Another of the same.

The next slide is seepage from a tank farm. Not an entirely fair slide because this was taken after Hurricane Camille; however, it

does show that you have to plan for severe weather when you are building offshore facilities. We do have, as I recall, some quite serious Nor'easters up here that could have devastating impacts and must be planned for.

The next series of slides is from the North Sea and shows some of the impacts there. This is one of the offshore platforms at the Ekofisk field in the North Sea. These are not small facilities. The North Sea is probably our best reference point because it was a relatively virgin area that has been developed by the oil companies. In the background you see flaring of natural gas from another platform. If it is decided that the natural gas deposits are not of commercial quantity, it is flared, and sometimes there is considerable waste, sometimes 8–10 million cubic feet a day of natural gas is flared.

Next slide, please.

Again, an Ekofisk platform, the work boats down below, the crew quarters. Very large facilities.

Next slide, please.

This is the Ekofisk underwater storage facility fairly well known now, the first of its kind—a cement storage tank. There is quite a controversy going on in the North Sea area about cement platforms and rig facilities because their construction requires very deep water, and the one place that has been proposed in Scotland, I believe, is a nature conservancy sanctuary.

Next slide, please.

This is a pipeline barge, which they use to lay pipelines coming ashore from the rigs.

Next slide.

This is one of the workboats that goes back and forth among the rigs.

The next slides show some of the coastal impacts. This is the Port of Aberdeen which was a thriving fishing community. Many of the fishermen have had to move up to the Port of Peterhead for several reasons. One reason is that the oil company needed so many men to fill their jobs that they have hired people away from the fisheries. Now a gentleman from the British Embassy said to me, "You cannot expect somebody not to take a better job," and I agree with him completely, but I think the question is how do we provide an incentive to keep our fisheries in good shape, certainly in better shape than they are in New England at the moment.

There have been serious impacts on the Scottish fisheries because of debris thrown off the rigs and interference from the equipment and from harbor congestion. Port fees were raised to a level which the oil companies could afford to pay but many fishermen could not.

Next slide, please.

This is a lay barge stinger being repaired in the Port of Aberdeen.

Next, please.

This is a pipeline storage facility in Aberdeen for the pipelines from the BP 40's field.

Next, please.

This is harbor construction in Aberdeen.

Next.

This is a pipeline landfall in Peterhead, Scotland.

Next slide.

This is a farmer's field. It was a farmer's field. Now construction has started. This is near Inverness, Scotland, and it is becoming a fabrication facility.

Next slide, please.

This is another offshore platform with an oil slick.

Next slide, please.

This is a skimmer used for skimming up spilled oil.

Next slide, please.

These are some of the new subsea completion systems.

They are being talked about, and there is one I believe in commercial operation now. Such a facility is completely under water, but there may be problems with fishing nets getting caught over them, and there is a question about whether or not they will be economic for use on the east coast.

Next slide, please.

Another kind of subsea completion system.

Now we are over in Ireland. This is near Bantry Bay, a superport facility. I will run through these very quickly.

This is one of the largest supertankers that is now plying the seas. It is one of Gulf's universe class tankers, 326,000 deadweight tons. It is 1,135 feet long and 175 feet wide. The cargo capacity is 2.2 million barrels of oil. That is enough to run a 60,000 barrel a day refinery for a month. And to give you some idea of where some of the oil profits come from, this was taken last July when oil was priced at about $3.40 a barrel, and the cargo on that tanker at the time this was taken was worth $9 million.

Next slide, please.

That is a closeup of the draft measurements. Eighty feet of that tanker is under water.

Next, please.

This is looking down the tanker from the bridge. These vessels are about a quarter of a mile long. That means that in a heavy fog you cannot see from one end to the other.

Next slide, please.

Looking down toward the bridge from the other end.

Next slide.

This is some of the international crew. They are Rumanian, Liberian, Greek, almost every nationality you can think of, and they sometimes have a rather difficult time communicating. That is one of the problems with these tankers. There is a crew of 52 and very few of them speak the same language.

Next slide, please.

This is the control room where they keep track of the pressure and all of the vital statistics of each tank.

Next slide.

This is the Port of Milford Haven. It used to be, I suspect, very much like Gloucester. It is a fishing village. It now has five major oil company terminals for supertankers, four refineries, and the largest oil-fired power station in Europe. Part of it was dredged for the purpose of the supertanker port.

Next slide, please.

This is the BP terminal at Milford Haven.

Next slide, please.

This is a small, I would guess about a 4,000-ton tanker—the kind that we really worry about because it is the type of tanker that is old, has poor equipment, and is more likely to dump its dirty ballast water out in the middle of the ocean somewhere at night when nobody is around to monitor it.

Next slide, please.

This is the power station in Milford Haven. It uses 50 million gallons of cooling water an hour and consumes 11,000 tons of oil a day.

Next slide, please.

These are some of the pipes at Bantry Bay.

Next slide, please.

This again is Bantry Bay, and this is the settling pond. They have extremely good ballast treatment facilities at Bantry Bay. You see a skimmer up there, and this is the settling pond for the postballast treatment.

Next slide, please.

This is some of the heavy industry around the Port of Milford Haven. I apologize for the lack of clarity in these. They were taken from a moving car.

Next slide, please.

Lots of refineries, mills, plants—heavy industry.

This is a monobuoy facility in the North Sea. It is the kind of superport that has been proposed most often for the east coast and gulf coast of this country.

The next slide is a closeup of it. You can see how the boat is hooked up there. A single point mooring buoy is simply a buoy offshore with hoses going to the buoy and then down to underwater pipes, and from there the oil is piped ashore.

In my opinion, if we are going to have supertankers coming in, this is the best way to do it.

Could we have the lights.

I would just like to say a few words in closing if I might. We heard from Dr. Devanney, an oft-expressed economist's opinion, that environmental costs in one area can be offset by economic benefits, such as with revenue-sharing proposals; and that environmental costs associated with offshore development are highly localized while the economic benefits are spread across the Nation.

This brings up two important questions: localization of impact and willingness to pay for environmental protection. In terms of the area covered, the impacts of coastal development compared to the size of the country may, indeed, be small; however, we must remember that 80 percent of our population lives within an hour's drive of the coast. That figure puts localization of impact in proper perspective. Coastal development will affect many millions of people.

With regard to the second question, we believe people are willing to pay for environmental protection and for their quality of life. We have an extreme example with cases of ranchers in Wyoming and Montana who have refused $1 million to give up their ranches to the coal companies who want to strip mine. We have examples in New England of fishermen who have refused to be bought by the oil companies.

But we do not really need extreme examples. A recent survey conducted by Pat Caddell and his colleagues at Cambridge Survey Research on environmental values in the State of Florida produced

surprising results. Fifty-nine percent of the respondents selected an environmental issue as the most important problem facing the State. And then, to quote from the report itself:

> Even the fuel and oil crisis have not weakened voters' commitment to the environment. Economic development runs a distant second to environmental protection on the voters' hierarchy of concern. Floridians seem to feel that economic development benefits the special interests to the detriment of the general public interest of all the average citizens.

Coming from the State of Florida, that is quite a reversal, and I think you would find similar reactions in most Coastal States these days.

I think it is clear that people are willing to pay for environmental protection, and the public must be included in the decisionmaking process which will determine what kind of development occurs in New England and where it will occur. We must develop a system of priorities in New England for development.

We hope that your two committees, through developing ocean policy and administrative procedures, will help to establish new involvement by different sectors of the public; those concerned with the fisheries, with land-use impacts, and with our New England quality of life.

Thank you.

Senator KENNEDY. Thank you very much. A very helpful statement.

Before I get into some questions, we have Mr. Swatek, Mr. Faramelli, and Barbara Fegan. We are running a bit behind. We have about 1 hour and 10 minutes, and we have three people afterward; so we want to move along. We can give you about 25 minutes between you, and then I will have a few questions. Let's move along.

Mr. Swatek.

STATEMENT BY PAUL SWATEK, NEW ENGLAND SIERRA CLUB

Mr. SWATEK. Thank you, Senator Kennedy.

My remarks today will focus on really just two questions. The first is how swiftly should we move to exploit petroleum resources that may be out on the Continental Shelf. For reasons which I will enumerate, it appears most unwise for the region to embark precipitously upon the sort of a crash-leasing exploration and development program that seems to be emerging from the administration's Project Independence. Therefore, it is important, it seems to me, to ask a second question; and that is, what steps can we take now to buy time while we lay the groundwork for a properly planned, carefully controlled program of exploration and production of OCS petroleum resources.

It has been mentioned that during 1973, President Nixon announced an increase by a factor of 10 in the acreage of offshore lands that are going to be leased. He initiated a 1-year study which was completed by the Council on Environmental Quality and released on April 18 of this year. That study seemed to point its finger directly at Georges Bank and New England, saying that "We feel that this is where development can take place with the least damage." Thus it appears that a lease sale in this area may simply await resolution by the Supreme Court of the jurisdictional questions in the *United States* v. *Maine* case and the development of an adequate environmental impact statement as required by NEPA.

The CEQ report and most of the other reports that have looked at the problem seem to agree that while large spills and other pollution incidents may be the most visible and dramatic environmental effects, of petroleum developments, the greatest long-range concern relates to potentially permanent changes in land and resource use patterns that such development might bring.

The Council states that OCS related development will "shift populations, change residential and commercial development and land use extensively" and that "it could threaten the architectural and historic resources that have been protected for generations." "Unless land use planning and regulatory capability is quickly developed in such areas, the result could be permanent degradation of the environment and unnecessary disruption of traditional values and life styles."

We are talking about the preemption of large areas of developable land, devoting it to petroleum development. We are talking about the preemption of large quantities of water resources which are becoming scarce in this region, fresh water resources.

These effects will outlast the life of the potential petroleum resource, and thus it seems to me that we ought to be prudent, that we ought to plan adequately and to establish controls prior to initiating development.

Beyond the need to control land use impacts, there are a number of other things, some of which have been touched upon—revision of Federal leasing policies; better standards; inspection procedures; enforcement mechanisms; liability provisions. These are all things that really need to be changed, to be augmented at least as fast as we increase the rate of leasing and the rate of exploration.

We also need to gather not just general information about the impact of oil on marine and coastal ecosystems but baseline information about the specific sites. We need to know more about what is out there on Georges Bank, and of course, it takes time to assemble this information.

An additional very important point that was made by the CEQ report and others is found in the NAS critique which you have mentioned. They report that "Impacts are a function not only of the nature and magnitude of the development but also of the rate of development. When such programs are undertaken on a crash basis, the local and regional economies may be subject to the economic and social ills of boom and bust. Slower, controlled development rates over longer periods would minimize these distortions."

This point is reinforced by the Policy Study Group of the MIT Energy Lab which recently published an economic evaluation of energy self-sufficiency. The MIT Group concludes that "the more quickly we try to achieve independence, however it is defined, the greater will be the cost in both economic resources and in environmental degradation."

A pace of development that is too fast produces a loss of control. It does not allow for proper planning, taxes the development infrastructure, and causes local shortages of goods and labor. These factors tend to cause costs to increase, thereby adding to inflationary pressures.

The experts, then, believe that adequate preparation and proper phasing and timing are critical to optimizing the onshore development opportunities and to minimizing the risks.

Are we laying the needed groundwork? I think not. The same administration that proposed a tenfold increase in the rate of leasing and which collected a billion and a half dollars in a recent lease sale in the northeastern Gulf of Mexico apparently has decided that to fund the Coastal Zone Management Act which was signed by the President with great fanfare in 1972 would be "inflationary". This act was meant to provide $42 million a year in grants in aid to Coastal States so that they could develop coastal zone management plans. The States are supposed to inventory their coastal resources, and identify means by which they propose to exert control over land and water uses. They are supposed to establish broad guidelines on priority uses in particular areas and describe an organization structure to implement the management program. The act contemplates that it will take a State 3 years to develop these plans, yet it is only very recently that the Federal Government has released a portion of the congressionally authorized funding, and that money has begun to flow to the States. This means that one of the most critical steps in moving toward orderly OCS development has been delayed by more than a year by action of this administration.

It is critical that we get our priorities in line and that we begin to put first things first. We must not allow the memory of the gasoline lines of last February and March to panic us into premature decisions to lease as soon as possible on the theory that we must get the oil as soon as possible. Rather, conservationists urge that we move at a more deliberate pace. This does not mean do nothing. Rather, it means getting going on Coastal Zone Management and comprehensive land-use planning. It means gathering baseline data. It probably means some geophysical exploration, but conservationists demand that the results of exploration should be made public.

As part of its policy on offshore oil development, the Sierra Club National Board of Directors has called for a separation of exploration from production leasing, so that the government knows what it is selling prior to the lease sale. If the exploratory phase is carried out under the control of the government and before leases are sold, it should be in a better position to act in the public interest—to minimize safety and environmental risks and to maximize benefits.

This program will not be accomplished tomorrow. In the meantime, we are told we have to have the oil as soon as humanly possible. The energy extraction industries hammer away at this theme incessantly. However, it is worth taking a second look at what they suggest.

Economists are beginning to talk about consumer resistance to high-priced energy. What they mean is that with energy prices as high as they are, demand has slackened. There is now talk of a possible worldwide oil surplus and speculation that this could drive the price of Mideast oil down somewhat. Speculation of this sort was in Business Week and the Wall Street Journal last week. We may have more time then than we thought last winter.

Furthermore, we can make more time for ourselves by heeding conservationists advice to conserve. The Ford Foundation energy policy project says it this way:

> The difficulties and uncertainties of getting more domestic supplies in the short term shift most of the burden for bridging the energy gap to lower consumption.

The prospect for achieving considerable savings is real. The Office of Emergency Preparedness in 1972 estimated that by 1980, the target date for Project Independence, national energy demand could be cut by as much as the equivalent of 7.3 million barrels a day of oil through energy conservation measures.

I will not try to list the specific measures that need to be taken, beyond saying that it is important that we eliminate some of the disincentives to more efficient energy use, such as promotional utility rate structures; railroad freight rates that discourage recycling; policies that favor auto and air transportation over more efficient modes of transportation, such as mass transit and rail.

Energy conservation will not do it all. New England has every reason to be a pioneer in the development of alternative, renewable energy sources, such as solar power and wind generators. Our strong technological base helps us lead in the development of more efficient ways to use existing fossil fuel stocks by the development of MHD, for instance, and fuel cells.

In the time frame of OCS development, the New England region should not rule out a greater use of coal. There are plentiful deep-mined reserves in Appalachia and new technologies coming on line that allow us to burn this plentiful fuel cleanly.

New England does have time to take time with OCS development. The oil and gas that may be out there on the OCS would be nice to have tomorrow, but it will be even nicer to have it later on when we will be in a better position to get our oil and gas without risking as much.

Thank you, Senator.

Senator KENNEDY. Excellent statement.

Mr. Faramelli.

STATEMENT BY NORMAN J. FARAMELLI, ACTING CHAIRPERSON, NEW ENGLAND OIL COALITION

Mr. FARAMELLI. Thank you, Senator. It is a privilege to be able to testify here on behalf of the New England Oil Coalition.

Our coalition represents civic and environmental groups throughout the New England region, of which the Massachusetts Oil Coalition is one part. Our purpose is to promote citizens' participation in the planning of oil facilities in order to achieve maximum benefits with minimum social and environmental disruptions.

My remarks will be addressed primarily to the social impact of the OCS drilling, and then on how we see the role of citizens' groups, such as our own in OCS development planning.

Offshore drilling on the OCS has enormous onshore impacts, as Barbara's slides adequately indicated. That includes, of course, oil refineries as well as gas processing units.

OCS affects the entire social infrastructure as a result of stimulating population growth and industrial activity. New residents and new industrial efforts require more water, sewers, electricity, schools, houses, hospitals, roads, public transportation, recreational facilities, etc. The report by the CEQ indicates that the demand for schools, sewerage, public transportation, etc., may be difficult to meet in New

England. Such factors, however, are usually ignored or given secondary importance in formulating OCS plans. But offshore and onshore development must be viewed as an integral unit. Thus, the problems associated with siting onshore facilities, along with their impacts, should be resolved before offshore development proceeds. That requires an integrated plan, the likes of which we have not yet seen. What we do see today is the Department of Interior promoting and facilitating the leasing of offshore drilling sites, with the assumption that all other problems will fall into place.

The environmental problems cited in the other testimonies have severe social impacts. For example, there are critical water supply problems in New England, southern New England in particular. The development of oil facilities means that water consumed by them cannot be used for other purposes. The CEQ report states that significant increases in both air and water pollution can be expected in local areas, even assuming the best available control technology.

Those problems can have severe social repercussions. A study done by the University of New Hampshire indicates that housing, recreation, white collar businesses (insurance and R. & D., etc.), would be discouraged from localities near an oil refinery. Social and economic impacts have not been adequately dealt with in the CEQ report, to be sure. Special models are needed for each region and locality to estimate the real impacts.

We believe that a rational scheme should be developed for each region that can help minimize social and environmental damages and maximize the benefits. But that cannot be accomplished without careful and deliberate planning.

Consider, for example, the planning of an oil refinery. Once it is established that a refinery is needed, three questions have to be answered: What kind of oil refinery? Where does it go? Whom does it benefit?

The New England Oil Coalition believes that the refinery should be the most efficient and least polluting possible. We believe that there should be no oil refineries, tank farms or petrochemical plants in the New England coastal zone. Construction in the coastal zone areas causes enormous damage to the environment as well as to tourism and recreation.

Senator KENNEDY. Where are you going to put it then? What location would you support?

Mr. FARAMELLI. Inland. That is a possibility. Inland refineries, out of the coastal zone.

Senator KENNEDY. Anyplace in New England? Have you made any suggestions as to where?

Mr. FARAMELLI. No, we do not have any specific sites or recommendations, but there is one being considered in Sanford, Maine, which seems reasonable, more reasonable than the other proposals.

The benefits of any facilities should be received by the host and nearby communities. Tax payments to the locality should be fair and meaningful. The costs and benefits of each facility should be equitably distributed.

A 250,000-barrel a day refinery, costing around $400 million, will provide 200–500 ongoing jobs, depending upon the complexity of the

refinery, Most of the employment, 2,200 jobs, comes during the 2- to 3-year construction period. But what happens to the work force after the construction is completed? Can we assume that there will always be new oil-related facilities to be constructed? Capital intensive investments, such as oil, can change the character of the region while providing only a handful of jobs. Also, a 250,000-barrel a day refinery requires 1,500 acres of land. Where that facility is located is very crucial. One should always deal with the social and economic opportunity costs. That is, if the 1,500 acres were not used for a refinery, what would or could it be used for?

A critique of the CEQ report done by NAS claims that impacts of OCS are a function of the rate, nature, and magnitude of the development. That critique also suggests that no OCS leasing should occur until after the development of adequate coastal zone plans.

In the opinion of our coalition, we should proceed with great caution and careful planning of the Outer Continental Shelf. Onshore facilities must be integrated with offshore efforts. Rapid exploration and production of OCS means the rapid development of onshore refineries.

Let me add one word on citizen participation, since time is running short.

The CEQ report states that the public must be involved and be given a major advisory role in the Federal management and regulation of the OCS.

Although that statement is commendable, as part of the public, we do not have the foggiest notion as to what it means. Does it mean that our advice will be taken seriously and that a genuine participatory planning process will be developed? Or does it mean that the public can voice a meaningless protest at a public hearing only after the final design has been established? We hope that the former is the case, but as of now we see no signs of it.

Groups such as our coalition are often accused of playing an obstructionist role. That is not true. Citizens' groups should be able to and can relate to an open-planning process. If the planning process is not open to us, we have no other option but to protest. If citizens' groups are taken seriously and included in that planning process, the net effect might be a smoother process and not a series of avoidable confrontations.

Thank you.

[The complete statement of Norman J. Faramelli follows:]

STATEMENT OF NORMAN J. FARAMELLI, ACTING CHAIRPERSON, NEW ENGLAND OIL COALITION

My name is Norman Faramelli. I am affiliated with the New England Oil Coalition, representing civic and environmental groups throughout the New England region. Our purpose is to promote citizens' participation in the planning of oil facilities in order to achieve maximum benefits with minimum social and environmental disruptions.

My remarks will be addressed primarily to the social impact of outer continental shelf (OCS) drilling, and then on how we see the role of citizens groups (such as ours) in OCS development planning.

SOCIAL IMPACT

Off-shore drilling on the continental shelf has enormous on-shore impacts. Not only will there be exploration, production, tankers, etc., OCS drilling means on-shore tank farms, pipelines, ship repair facilities, crew bases, along with oil re-

fineries, gas processing units, petrochemical plants, and support services. The extent of the on-shore impact is directly related to the rate and scope of the off-shore drilling.

OCS affects the entire social infrastructure as a result of stimulating population growth and industrial activity. New residents and new industrial efforts require more water, sewers, electricity, schools, houses, hospitals, roads, public transportation, recreational facilities, etc. The report on OCS drilling by the Council on Environmental Quality (CEQ) indicates that the demand for schools, sewage, public transportation, etc. may be difficult to meet in New England.[1] Such factors, however, are usually ignored or given secondary importance in formulating OCS plans. But off-shore and on-shore development must be viewed as an integral unit. Thus, the problems associated with siting on-shore facilities (along with their impacts) should be resolved before off-shore development proceeds. That requires an integrated plan, the likes of which we have not yet seen. What we do see today is the Department of Interior promoting and facilitating the leasing of off-shore drilling sites, with the assumption that all other problems will fall into place.

The environmental problems cited in other testimonies have severe social impacts. For example, there are critical water supply problems in Southern New England. The development of oil facilities means that water consumed by them cannot be used for other purposes. Also, the CEQ report states that "significant increases in both air and water pollutants can be expected in local areas, even assuming the best available control technology" (I–12). Those problems will also have several social repercussions. A study done by the University of New Hampshire indicates that housing, recreation, white collar business (insurance and R&D), etc. would be discouraged from localities near an oil refinery.[2] Social and economic impacts have not been adequately dealt with in the CEQ report. Special models are needed for each region and locality to estimate the real impacts.

We believe that a rational scheme should be developed for each region that can help minimize social and environmental damages and maximize the benefits. That cannot be accomplished without careful and deliberate planning.

Consider, for example, the planning of an oil refinery. Once it is established that a refinery is needed, three questions have to be answered. (1) What kind of oil refinery? (2) Where does it go? (3) Whom does it benefit? NEOC believes that the refinery should be the most efficient and least polluting possible. We believe that there should be no oil refineries, tank farms or petrochemical plants in the New England Coastal Zone. Construction in the coastal zone areas causes enormous damage to the environment as well as to tourism and recreation. The benefits of any facilities should be received by the host and nearby communities. Tax payments to the locality should be fair and meaningful. The costs and benefits of each facility should be equitably distributed.

A 250,000 B/D refinery (costing $400 million) will provide 200–500 on-going jobs, depending upon the complexity of the refinery. Most of the employment (2200 jobs) comes during the 2–3 year construction period.[3] But what happens to the workforce after the construction is completed? Can we assume that there will always be new oil-related facilities to be constructed? Capital intensive investments (such as oil) can change the character of the region while providing only a handful of jobs. Also, a 250,000 B/D refinery requires 1500 acres of land. Where that facility is located is crucial. One should always deal with the social and economic opportunity costs. That is, if the 1500 acres were not used for a refinery, what would or could it be used for?

A critique of the CEQ report, done by the National Academy of Sciences, claims that impacts of OCS are a function of the rate, nature and magnitude of the development.[4] (That critique also suggests that no OCS leasing should occur until after the development of adequate coastal zone plans.) In the opinion of the NEOC, we should proceed with great caution and careful planning of the OCS. On-shore facilities must be integrated with off-shore efforts. Rapid exploration and production of OCS means the rapid development of on-shore refineries. Today, those refineries will be located in those communities that can offer the least political opposition. Rapid development can easily mean minimizing the

---

[1] *O.C.S. Oil and Gas– An Environmental Assessment.* A Report to the President by the Council on Environmental Quality. 20 March 1974.

[2] The University of New Hampshire. *The Impact of an Oil Refinery Located in Southeastern New Hampshire: A Preliminary Study.* 1974.

[3] Arthur D. Little, Inc. *A Preliminary Economic Study of Alternate Methods of Supplying Petroleum Products to Eastern Massachusetts.* Written for the Massachusetts Port Authority, 1973.

[4] *Issues in the Assessment of Environmental Impacts of Oil and Gas Production on the Outer Continental Shelf* (A Critique of the CEQ Report). National Academy of Sciences, National Academy of Engine ering. Washington, D.C. 1974.

benefits to the communities and maximizing the social and environmental problems.

CITIZEN PARTICIPATION

The CEQ report states that "the public must be involved and be given a major advisory role in the federal management and regulation of the OCS." Although that statement is commendable, as part of the public, we do not have the foggiest notion as to what it means. Does it mean that our advice will be taken seriously and a genuine participatory planning process will be developed? Or, does it mean that the public can voice a meaningless protest at a public hearing only after the final design has been established? We hope that the former is the case, but as of now we see no signs of it.

Groups such as NEOC are often accused of playing an obstructionist role. That is not true. Citizens' groups should be able to and can relate to an open-planning process. If the planning process is not open to us, we have no other option but to protest. If citizens' groups are taken seriously and included in the planning process, the net effect might be a smoother process and not a series of confrontations.

Senator KENNEDY. Barbara Fegan.

Ms. FEGAN. I am Barbara Fegan, and one thing that happens to the last person on the panel is you get to say, "Me, too."

Senator KENNEDY. I bet you have got a lot more to say, Barbara.

STATEMENT BY BARBARA FEGAN, VICE PRESIDENT OF THE ASSOCIATION FOR THE PRESERVATION OF CAPE COD

Ms. FEGAN. Let me just say I am vice president of the Association for the Preservation of Cape Cod and also land use chairman of the League of Women Voters of Massachusetts and also chairman of the citizens advisory committee to the Southeastern New England Study of the New England River Basins Commission, and I am not wearing any of those hats today. But I certainly have formed my opinions by my association with those three organizations. Some of my fellow members will agree, I am sure. Mike Frucci quoted the association this morning.

I do appreciate the opportunity to talk with you today because your solicitation of my remarks reflects your interest in the concerns of the people who live in the area that could be affected by the Outer Continental Shelf development. And it is reassuring to know that someone is looking at the ocean in an overall policy sense rather than a piece-by-piece, crisis-by-crisis orientation.

First, in terms of policy, whenever there is a conflict between using a natural resource for food or using it for energy, your priority should always be the production of food or the protection of the food source. In the matter of OCS drilling, we have two potential conflicts. The danger of disturbing and destroying the bottom organisms in the process of drilling on the Georges Banks and the threat of pollution of the waters of the ocean and the rich nurseries and pantries of our coastal wetlands.

Now, it is not necessary for me to document the growing scarcity of food and particularly protein food in the world. The Georges Banks area produces one-sixth of the world's fish. It must be considered first as a food resource area.

The nutrient contributions of the estuarine areas support the entire marine food chain. Over 150 species of finfish, nearly 70 percent of the most valuable Atlantic coast fisheries, are dependent on the estuary during some phase of their life cycle.

Now the second policy I recommend is that you place a high priority on the recreational experience provided by our coastal areas. Not only for the economic benefit of the recreational activities to the area, but for the recreational benefit for the individuals that have the recreational experience. Cape Cod, where I live, is something very special to all the people of the United States. You sell more books about Cape Cod in San Francisco than you do in Hyannis. It has a deep meaning for people. We have a Federal investment in the national seashore that reflects a national policy in terms of what Cape Cod represents to the people.

As you see, I have based my policy recommendation on the strong assumption that there will be some oil and gas activity on Georges Banks. I would support evaluation of potential offshore oil for the purpose of determining the overall energy resources of the Nation, but, because of the probability that some oil spillage will occur during exploitation and transfer procedures, this resource should be thought of as a last resort, emergency supply. It might even be needed someday for food.

Basic to any successful policy is its comprehension and acceptance by the people. The Government must be responsive to the people, including a Department of the Interior able to take their values into consideration. No one today really knows what people want. We must get people involved. The debate must break through the distractions of day-to-day concerns. Who knows today what the people of the region regard as most important to them or what responsibility they feel to people in other areas near OCS drilling possibilities? No one has asked them. That is until today.

The dialog must continue. The citizens must be included in the policy development. The whole process is strengthened by citizen participation.

Should there be development of gas and oil production in OCS, there will be pressure for shoreside facilities, storage facilities, refinery sites—this, as I say, this is the "Me, too" part of the statement, Senator—and either deepwater or shoreside terminals. There is considerable pressure now for a deepwater buoy and tank farm north of Boston, in Newburyport.

Such development has an impact far beyond the town for which it is proposed. Massachusetts does not have a mechanism for these regional decisions. Not only is the decision regional, it must be based on an interdisciplinary body of information. It so happens that the tank farm proposed for Newburyport is sited just above a significant ground water reserve. Heavy development of this site could affect this ground water. Malfunction might allow oil to leak into the public water supply.

The Southeastern New England Study has been involved in the multidisciplinary approach to natural resource allocation with a significant citizen participation program. The study covers eastern Massachusetts and the State of Rhode Island, an area of 4,400 square miles where 5 million people live, that is 50 percent of New England's population and 7 percent of New England's land. The study addresses the complex natural resource issues facing this area and its people, and it is a cooperative study by State and Federal agencies. The recommendations will help guide future policies and public investments in resource management and protection projects.

During the process, the study team developed two sets of alternatives, one based upon a high rate of growth and industrial development and another based on a lower, more moderate rate of growth and development. During a series of workshops, citizens of the area evaluated and ranked the proposals. The final set of recommendations are a synthesis of the alternatives which best balance local and regional economic and environmental needs. It will be a tool for public and private decisionmaking.

During the time that the study has been going on—I am going to give you this—the kinds of work that has been done by the people has been done on the backs of envelopes and hot off the Xerox machine. It hasn't been done after the planners have finished their beautiful production that you don't want to disturb, but the process has allowed people to have their values considered during the planning process.

Because it has taken into consideration the conflicting as well as the complementing uses and has used a multidisciplinary approach and has solicited citizen values during the planning, its data and recommendations can be useful to the State and to local communities faced with refinery and/or storage area siting for oil and gas.

Massachusetts does not have, at present, a coordinated, comprehensive, joint State-local planning process, nor does it have a method for managing resources that cross town boundaries or developments of greater than local impact. Many of the decisions for locating key facilities depend upon their attractiveness to either the public officials or local residents. This situation can result in the community with an educated articulate electorate resisting a regionally significant but unattractive facility but another community without the resources of the first being saddled with the development.

The State must develop a mechanism that permits rational, logical decisionmaking based upon sound data with a healthy scoop of citizen participation. There must be a method for sharing the benefits, that is those tax benefits that accrue to a local community, as well as the disbenefits. A community accepting a regionally required facility must be compensated. For example, if by accepting the facility, the community forgoes a recreational facility, recreational access must be provided for those people in other communities.

The process developed will be peculiar to the State or region that develops it. We do not need a Federal size 14. The United States Department of Agriculture, just after World War II, promulgated the required measurements for clothing to fit women of a certain height and weight. The size 14 meant to fit everyone did not fit anyone well. You always have to make alterations in Federal requirements.

So Massachusetts must develop its own process for regulating onshore developments generated by OCS. The development must not happen just because it is there.

Ms. FEGAN. I would like to have 1 minute more for a personal aside. I recall when my mother was my age listening to her describe the magnificient technology that had developed in her life and the crises that her country went through during that time, and now, as I look back, she had nothing really serious to face in terms of those things that the country has faced in my lifetime. The fact that we weathered her half century of crisis and technology development and we weathered my half century gives me a great deal of hope for the future of this country and its processes.

Senator KENNEDY. Thank you very much for a very helpful statement.

[The complete statement of Barbara Fegan follows.]

IMPACT ON MASSACHUSETTS OF PROPOSALS FOR OFFSHORE OIL AND GAS DRILLING

I am Barbara Fegan, of South Wellfleet, Massachusetts. I am vice president of the Association for the Preservation of Cape Cod, Land Use Chairman of the League of Women Voters of Massachusetts and chairman of the Citizens Advisory Committee to the Southeastern New England Study of the New England River Basins Commission. But I'm not wearing any of those hats today, the opinions I express are my own. I do owe a great deal in the formulation of those opinions to my association with those three organizations. Some of my fellow members, I'm sure, will agree with my remarks.

I appreciate the opportunity to talk with you today because your solicitation of my remarks reflects your interest in the concerns of the people who live in the area that could be affected by outer continental shelf development. And, it is reassuring to know that someone is looking at the ocean in an overall policy sense rather than piece by piece or crisis by crisis.

First, in terms of policy; whenever there is a conflict between using a natural resource for food or energy, your priority should always be the production of food or the protection of a food source! In the matter of OCS drilling, we have two potential conflicts. The danger of disturbing and destroying the bottom organisms in the process of drilling on the Georges Banks and the threat of pollution of the waters of the ocean and the rich nurseries and pantries of our coastal wetlands by oil spills.

It is not necessary for me to document the growing scarcity of food and particularly protein food in the world. The Georges Banks area produces one-sixth of the world's fish. It must be considered first as a food resource area.

The nutrient contributions of the estuarine areas support the entire marine food chain. Over 150 species of finfish (nearly 70% of the most valuable Atlantic coast fisheries) are dependent on the estuary during some phase of their life cycle.

The second general policy I recommend is that you place a high priority on the recreational experience provided by our coastal areas. Not only for the economic benefit of the recreational activities to the area but also for the re-creational benefit to the individual. Cape Cod, where I live, is something very special to the people of the United States. There are more books about it sold in San Francisco than in Hyannis.

As you see, I've based my policy recommendation on the strong assumption that there will be some oil and gas activity on Georges Banks. I would support evaluation of potential of offshore oil for the purpose of determining the over-all energy resource of the nation. Because of the probability that some oil spillage will occur during exploitation and transfer procedures this resource should be thought of as a last resort, energy supply. It might even be needed, some day, as a food supply!

Basic to any successful policy is its comprehension and acceptance by the people. The government must be responsive to the people, including a Department of the Interior able to take their views into account. No one, today, really knows what people want. We must get people involved, the debate must break thro' the distractions of day to day concerns. Who knows today what the people of the region regard as the most important to them or what responsibility they feel to people in other areas near OCS drilling sites? No one has asked them. That is until today.

The dialogue must continue. The citizens must be included in the policy development. The process is strenthened by citizen participation.

Should there be development of gas and oil production in OCS, there will be pressure for shoreside facilities, i.e. storage facilities, refinery sites and either deepwater or shore side terminals. There is considerable pressure now for a deepwater buoy and tank farm north of Boston, in Newburyport.

Such development has an impact far beyond the town for which it is proposed. Massachusetts does not have a mechanism for these regional decisions. Not only is the decision regional, it must be based on an interdisciplinary body of information. It so happens that the tank farm proposed for Newburyport is sited just above a significant ground water reserve. Heavy development of this site could affect this ground water. Malfunction might allow oil to leak into the public water supply.

The Southeastern New England Study has been involved in the multidisciplinary approach to natural resource allocation with a significant citizen participation program. The Southeastern New England Study (SENE) covers Eastern Massachusetts and the state of Rhode Island, an area of 4400 square miles where 5 million people live (50% of New England's population; 7% of New England's land). It addresses the complex natural resource issues facing this area and its people. The New England River Basins Commission is directing this cooperative effort of state and federal agencies. In January 1975, the Study will present a comprehensive set of recommendations to provide for more balanced use and protection of the water and related land resources. The results of the Study will help guide future policies and public investments in resource management and protectionprojects.

During the process, the Study team developed two sets of alternatives, one based upon a high rate of growth and industrial development and another based upon a lower, more moderate rate of growth and development. During a series of workshops, citizens of the area evaluated and ranked the proposals. The final set of recommendations are synthesis of the alternatives which best balance local and regional economic and environmental needs. It will be a tool for public and private decision making.

Because it has taken into consideration, the conflicting as well as the complimenting uses and has used a multidisciplinary approach and has solicited citizen values during the planning, its data and recommendations can be very useful to the state and local communities faced with refinery and/or storage area siting for oil and gas.

Massachusetts does not have, at present, a coordinated, comprehensive, joint state-local planning process. Nor does it have a method for managing resources that cross town boundaries or developments of greater than local impact. Many of the decisions for locating key facilities depend upon their attractiveness to either the public officials or local residents. This situation can result in the community with an educated articulate electorate resisting a regionally significant but unattractive facility but another community without the resources of the first being saddled with the development.

The state must develop a mechanism that permits rational, logical decision-making based upon sound data with a healthy scoop of citizen participation. There must be a method for sharing the benefits (tax base) as well as the disbenefits. A community accepting a regionally required facility must be compensated.

For example: If by accepting the facility, the community foregoes a recreational facility, recreational access must be provided its residents in other communities.

The process developed will be peculiar to the state or region that developes it. We do not need a federal size 14. The USDA, just after WW II, promulgated the required measurements for clothing to fit women of a certain height and weight. The size 14 meant to fit everyone did not fit anyone well. There were always alterations to be made.

So Massachusetts, must develop its own process for regulating onshore developments generated by OCS development. The development must NOT happen just because it is there!

Senator KENNEDY. Before this panel leaves, I want to say that they have presented to this hearing some important comments and testimony on different aspects of public policy concern.

I want to ask Mr. Kelly of the Interior Department a question. We know that at the present time the Department of Interior is preparing a comprehensive environmental impact statement on the Government's proposal to expand leasing to 10 million acres and the hearings are to begin next month. Now, what kind of opportunity would people like our witnesses today have to appear at those hearings and make their presentations?

Mr. KELLY. They would have full opportunity, Senator. The environmental impact statement that is underway now only deals with the goal of leasing 10 million acres in calendar 1975. That will be taken out to the various sections of the country for public input, but when it gets to any specific area, then the whole new process starts of developing

the environmental baseline information, public hearings, public involvement.

Senator KENNEDY. With regard to the larger question, public interest groups will have a chance to make their views known?

Mr. KELLY. We will solicit them.

Senator KENNEDY. You haven't done so yet?

Mr. KELLY. No, sir. The draft environmental statement is not completed.

Senator KENNEDY. When are you going to have the hearing on that?

Mr. KELLY. The draft is supposed to be completed sometime this month.

Senator KENNEDY. And then when will the hearing take place?

Mr. KELLY. Within 30 days after the release of the draft.

Senator KENNEDY. Is that published in the Federal Register?

Mr. KELLY. Yes, sir.

Senator KENNEDY. So they will have a chance to follow it, to read the Register and find out when it is scheduled.

Mr. KELLY. More importantly, I think they may know it ahead of me.

Senator KENNEDY. Beyond that, when you decide in a particular area that you are going to do a specific impact statement, is there another procedure by which they will be able to bring their interest to bear on the study?

Mr. KELLY. Yes. There is another process. As of about 6 months ago, the Secretary established an Outer Continental Shelf Research Management Advisory Board under the Federal Advisory Committee Act. In this the coastal states along with the Environmental Protection Agency and NOAA are asked to provide the scientific competence and to scope out baseline environmental studies. We need the baseline information before we could go to any kind of site specific environmental impact statement. So, in other words, we have a process wherein the State is being asked to help out to develop the kinds of information that would be needed to base an analysis on.

After that information is on board, if there was a proposal to drill for oil and gas on Georges Bank, we would initiate a draft environmental impact statement.

Senator KENNEDY. Mr. Swatek?

Mr. SWATEK. Senator, I would like to use an example to illustrate a bit of the problem that the citizens' groups have. Tomorrow, I believe, in Denver the administration is kicking off the first day of hearings in the series of 10 hearings around the country on Project Independence. As you know, they are developing a Project Independence blueprint which apparently is going to try to take the comprehensive view. Thus far, environmental groups have had one 8½ by 11 sheet with a nice brochure that sort of describes the hearings and describes Project Independence in a very general way.

We have had nothing in the way of a draft report. We have been denied access to the work documents which are being used by the various components of the Federal establishment that are working on the project. In fact, I understand that the Federal Energy Administration's Consumer Affairs Office in Washington has even had trouble getting information about the hearings. We were given 30 days to

comment on documents which are enormous just in the number of pages and, of course, of very broad scope.

We need a much more open process, the sort that has been a part of the southeastern New England study, the New England River Basins Committee which has put money in the budget to provide for a mechanism, a real mechanism to give citizens the access to information and the opportunity to try to effect the shape of the studies before the final thrust, the final shape of the program is already essentially set in concrete.

Senator KENNEDY. As I understand it, they are having a hearing August 22 or 23.

Mr. SWATEK. The 26th through the 29th.

Senator KENNEDY. Your name?

Mr. FAY. Lawrence Fay of the Federal Energy Administration. We will be holding the Project Independence hearings here in New England the 26th, the 27th, the 28th and hopefully the 29th in Faneuil Hall here in Boston. We have sent out close to a thousand invitations to groups, interested citizens all around New England. We have worked very closely with the New England Regional Commission, MIT Energy Lab., Mitre Corp. I would like to publicize these hearings and get some input on energy policy and get some New England concerns into the development of a national energy policy.

This has not been a closed process, and we hope it would be an open process. We welcome participation of all you people represented here. Thank you.

Senator KENNEDY. Now, the dates again, I have got several dates. I want to make sure I have got them right. The 29th.

Mr. FAY. The 26th, 27th.

Senator KENNEDY. The 26th through the 29th of August?

Mr. FAY. Yes.

Senator KENNEDY. Are you aware of the internal memo from Mr. Sawhill signed on July 22, that says that a final draft of the comprehensive energy plan, Project Independence, is to be completed by September 30 with a review to take place between October 1 and 10. Are you aware of that memorandum?

Mr. FAY. Yes, I am aware of that memorandum. This is part of the planning process and part of developing a blueprint. We are concerned about getting the New England position into that blueprint.

Senator KENNEDY. But the hearings will still be going on between October 1 and October 10. Yet you are planning your final report by September 30 which, I suppose, to people that are going to come down and testify and spend their time and prepare their testimony for October hearings doesn't make a great deal of sense. It doesn't make a great deal of sense to them or me.

Mr. FAY. I understand that. They are opening up that process, Senator.

Senator KENNEDY. Which process?

Mr. FAY. We are getting underway the end of August here.

Senator KENNEDY. So our groups are going to be all right. It is just people in the other parts of the country.

Mr. SWATEK. I would add that the New England FEO that I have had some dealings with because we do plan to present testimony has

tried to be helpful, has accommodated our desires. The problem is that they don't seem to have information to pass on to us.

Senator KENNEDY. I must say that it has been my experience too—we need to look into these problems. We go back to Washington in a couple of hours, and we will try to find out how these interests and concerns are going to be met. This is what my interest is. This is the kind of problem that I would think causes consumer groups and, I would think, the public generally a good deal of concern about the functioning and responsiveness of government.

I want to thank you very much for your statements and for your appearances here.

We have the last panel, Mr. Lee who is the director of Governor Sargent's energy office, Leo Allen who is assistant to State Senator Bulger, chairman of the State legislative commission on marine boundaries and resources, and Tom Fitzpatrick who is representing the regional commission.

Mr. Lee, why don't you start. We will extend the courtesies to the Governor first.

STATEMENT BY HENRY LEE, DIRECTOR, MASSACHUSETTS ENERGY POLICY OFFICE

Mr. LEE. Senator Kennedy, I thank you for this opportunity to appear before this subcommittee and to discuss some of the issues relating to the feasibility and impact of offshore oil development off the coast of Massachusetts.

I have been asked by your staff to limit my opening statement to two areas, the capability of the Commonwealth to protect its coastline and the nature of the relationship between the States and the Federal Government on matters relating to offshore oil.

I think it important that I preface my remarks by reaffirming Massachusetts' position that the Atlantic States have jurisdiction of the Outer Continental Shelf to a distance of 200 miles. This question is now before the Supreme Court, and a decision is expected before next spring.

The significance of the outcome of this case is obvious. If our contention is upheld by the Court, Massachusetts and New England can address the issue of whether to develop our offshore resources. The region will be able to examine the costs and the benefits of such development from the perspective of regional needs and priorities.

I see no evidence that the Department of Interior is willing to allow the States to play an integral role in the decision process. In fact, it seems as if the Department has already made its decision, a decision which would have a tremendous impact on the social, environmental, and economic fabric of this State.

Yet the States do have the capability to control offshore development by controlling the siting of onshore facilities such as transportation, distribution, and refining systems, as well as the indirect economic expansion resulting from the construction of these systems. It is up to the States to develop the capability to insure that their interests are protected.

We in Massachusetts have begun this task. Over the last 6 years the State, under the Coastal Wetlands Act, has restricted and regulated

the use of over 23,000 acres of salt marsh along our coast. Ocean sanctuaries statutes, prohibiting activities such as building structures on the seabed, removing sand and gravel, drilling or dumping, have been enacted for certain coastal areas.

In 1972 the legislature enacted and Governor Sargent signed a Massachusetts Environmental Policy Act. Similar to its national counterpart, the act requires all agencies of the Commonwealth to review and evaluate all of their activities to determine their impact on the natural environment.

To coordinate all State resource planning efforts, Governor Sargent established a cabinet-level Resource Management Policy Council.

Finally, the Governor has unilaterally established an energy policy office to bring together the various State agencies dealing with energy-related policy. The Governor has instructed me as director to set up an ongoing body of cabinet-level personnel to develop and monitor State policies and programs relating to energy resources.

These actions, important in their own right, have set the stage for the development and implementation of a comprehensive State coastal zone program to protect, develop, and restore our unique coastal resources.

The components of this program, which will run over a 3-year period, are set forth in the State's application document. I will not attempt to summarize its content; rather I would like to touch on three critical components relating to the topic before us this morning.

One of the primary goals of the State program is to develop the necessary tools to control the use and development of our coastal zone. However, until these tools are implemented, it is critical that some mechanism be established to review major projects and develop policy recommendations impacting on our coast. Therefore the State is in the process of establishing a Coastal Review Center to review proposed major developments and to serve as a focal point for coastal activities. At least three top professionals will be used to staff this operation.

Secondly, it is essential that any coastal zone program develop a public participation process to involve all segments of the State's population in the critical decisions relating to the future use of their coastline. To begin to meet this need, Governor Sargent established last winter a Task Force on Coastal Resources composed of people representing a broad spectrum of interested groups.

Finally, there are certain types of activities which are of such magnitude and scope as to impact not simply one State, but an entire region. It can be said that New England is perhaps more a region than any other area in this country. It is critical that the New England States work together on areas of common interest such as petroleum development and offshore oil.

Massachusetts has informed the Federal Office of Coastal Environment in NOAA that we are prepared in the second year of our coastal planning program to work jointly with our sister States in New England and our neighbor to the south, New York, through the New England River Basins Commission to study on a regional basis, issues such as petroleum development.

When the MIT offshore oil study was published 16 months ago, a task force of representatives of the New England States was established to continue the work begun in this study. The concept of such a

task force was sound, but the group has never seriously addressed the issues they were established to consider. Today, the Supreme Court decision which seemed so distant is close upon us; the Department of Interior has begun sort of a comprehensive offshore oil environmental impact statement. The hour grows late, and it becomes imperative that this task force be resurrected or reconstructed immediately.

The coastal zone legislation has established a precedent for a strong and viable Federal-State relationship. It provides not simply for State input into the decision process, but sets forth a strong, definite role. This role has been a model for other legislation now pending in Congress. I am specifically referring to the Senate version of the Deepwater Port Bill.

Contrasting with this precedent, the Department of Interior has emphatically insisted that the role of the State in the offshore development decision process can be no more than advisory. Until very recently communications between this State and the Department of Interior have been poor or nonexistent. Ironically, this closed-door policy works to the detriment of all parties, for as long as the State controls onshore developments, they have a strong leverage on what happens offshore. It is my firm belief that Interior is simply not going to be able to impose a decision on this region.

One of the reasons for Interior's reluctance to deal on an equal footing with the States seems to be the financial issue of who obtains the revenue from the lease. Since Massachusetts is still in court on the jurisdictional problem, I will not comment directly on that issue except to say that, until some amenable resolution to this problem is found, a viable Federal-State relationship will be extremely difficult to achieve.

In the next 4 years, this State is going to have to make critical energy decisions on issues such as offshore oil, refinery, and powerplant siting, and the need for new port facilities. How these decisions are made and how they are implemented will in large part determine the future of this Commonwealth.

We wish to work with the Federal Government in making these decisions, but we will not, and we cannot, default on our responsibility to insure that such decisions meet the needs of this region and its people.

Thank you.

Senator KENNEDY. Thank you very much. When will that decision be made?

Mr. LEE. The Master's report is due out this month, and the final decision finally will be made somewhere around March.

[The complete statement of Henry Lee follows:]

STATEMENT ON OFFSHORE OIL, AUGUST 5, 1974, BY HENRY LEE, DIRECTOR, MASSACHUSETTS ENERGY POLICY OFFICE

I thank you for the opportunity to appear before this committee and to discuss some of the issues relating to the feasibility and impact of offshore oil development off the coast of Massachusetts.

I have been specifically asked to limit my opening statement to two areas—the capability of the Commonwealth to protect its coastline and control large scale developments thereon—the nature of the relationship between the states and the federal government on matters relating to offshore oil development.

I think it important that I preface my remarks by reaffirming Massachusetts' position that the Atlantic states have jurisdiction of the outer continental shelf

to a distance of 200 miles. This question is now before the Supreme Court, and a decision is expected before next spring.

The significance of the outcome of the case is obvious. If our contention is upheld by the Court, Massachusetts and New England can address the issue of whether to develop our offshore resources. The region will be able to examine the costs and the benefits of such development from the perspective of regional needs and priorities.

I see no evidence that the Department of Interior is willing to allow the states to play an integral role in the decision process. In fact, it seems as if the Department has already made its decision—a decision which would have a tremendous impact on the social, environmental and economic fabric of this state.

Yet the states do have the capability to control off-shore development by controlling the siting of on-shore facilities such as transportation, distribution, and refining systems, as well as the indirect economic expansion resulting from the construction of these systems. It is up to the states to develop the capability to insure that their interests are protected.

We in Massachusetts have begun this task.

Over the last six years the state, through the Coastal Wetlands Act, has restricted and regulated the use of over 23,000 acres of salt marsh along our coast.

Ocean Sanctuaries statutes, prohibiting activities such as building structures on the seabed, removing sand and gravel, drilling or dumping, have been enacted for certain coastal areas.

In 1972 the legislature enacted and Governor Sargent signed a Massachusetts Environmental Policy Act. Similar to its national counterpart, the Act requires all agencies of the Commonwealth to review and evaluate all of their activities to determine their impact on the natural environment.

To coordinate all state resource planning efforts, Governor Sargent established a Cabinet level Resource Management Policy Council.

Finally, the Governor has unilaterally established an energy policy office to bring together the various state agencies dealing with energy-related policy. The Governor has instructed me as Director to set up an on-going body of Cabinet level personnel to develop and monitor state policies and programs relating to energy resources.

These actions, important in their own right, have set the stage for the development and implementation of a comprehensive State Coastal Zone program to protect, develop and restore our unique coastal resources.

The components of this program, which will run over a three year period, are set forth in the state's application document. I will not attempt to summarize its content; rather I would like to touch on three critical components relating to the topic before us this morning.

One of the primary goals of the state program is to develop the necessary tools to control the use and development of our coastal zone. However until these tools are implemented, it is critical that some mechanism be established to review major projects and develop policy recommendations impacting on the Massachusetts coast. Therefore the state is in the process of establishing a Coastal Review Center to review proposed major developments and to serve as a focal point for coastal activities. At least three top professionals will be used to staff this operation.

Secondly, it is essential that any coastal zone program develop a public participation process to involve all segments of the state's population in the critical decisions relating to the future use of their coastline. To begin to meet this need, Governor Sargent established last winter a Task Force on Coastal Resources composed of people representing a broad spectrum of interested groups.

Finally, there are certain types of activities which are of such magnitude and scope as to impact not simply one state, but an entire region. It can be said that New England is perhaps more a "region" than any other region in this country. It is critical that the New England states work together on areas of common interest. Petroleum development and offshore oil is one such issue.

Massachusetts has informed the Federal Office of Coastal Environment in NOAA that we are prepared in the second year of our coastal planning program to work jointly with our sister States in New England and our neighbor to the south, New York, through the New England River Basins Commission to study on a regional basis issues such as petroleum development.

When the MIT offshore oil study was published sixteen months ago, a task force of representatives of the New England States was established to continue the work begun in this study. The concept of such a task force was sound but the group has never seriously addressed the issues they were established to consider.

Today, the Supreme Court decision which seemed so distant is close upon us; the Department of Interior has begun an Atlantic offshore oil environmental impact statement. The hour grows late; and it becomes imperative that this task force be resurrected to reconstructed immediately.

The Coastal Zone legislation has established a precedent for a strong and viable Federal-State relationship. It provides not simply for State input into the decision process, but sets forth a strong, definite role. This role has been a model for other legislation now pending in Congress; I am specifically referring to the Senate version of the Deepwater Port Bill.

Contrasting with this precedent, the Department of Interior has emphatically insisted that the role of the state in the offshore development decision process can be no more than advisory. Until very recently, communications between this state and the Department of Interior have been poor or non-existent. Ironically, this closed-door policy works to the detriment of all parties, for as long as the state control onshore developments, they have a strong leverage on what happens off-shore. It is my firm belief that Interior is simply not going to be able to impose a decision on this region.

One of the reasons for Interior's reluctance to deal on an equal footing with the states seems to be the financial issue of who obtains the revenue from the lease. Since Massachusetts is still in Court on the jurisdictional problem, I will not comment directly on this issue, except to say that until some amenable resolution to this problem is found, a viable federal-state relationship will be difficult to achieve.

In the next four years, this state is going to have to make critical energy decisions on issues such as offshore oil, refinery and power-plant siting and the need for new port facilities. How this decision is made and how it is implemented will in large part determine the future of this Commonwealth.

We wish to work with the federal government in making decisions, but we will not, if we cannot, default on our responsibility to insure that such decisions meet the needs of this region and its people.

Senator KENNEDY. I have some other questions, but let us go ahead with Mr. Allen.

STATEMENT BY LEO ALLEN, SPECIAL LEGISLATIVE COMMISSION ON MARINE BOUNDARIES AND RESOURCES OF THE MASSACHUSETTS LEGISLATURE

Mr. ALLEN. As you know, Senator Kennedy, I am speaking for Senator William Bulger, chairman of the Special Legislative Commission on Marine Boundaries and Resources, and this is his statement.

Senator Kennedy, I appreciate very much the opportunity to present my views to this joint hearing. Regretfully, I am personally unable to attend having already made a longstanding commitment for this date. Mr. Allen will present my views on this matter and is prepared to answer your questions.

Before I discuss some of the technical considerations of Georges Bank oil exploitation, I wish to state clearly that it is my opinion that the decision to open Georges Bank has already been made, that your subcommittee, Senator, and the Ocean Policy Study are facing an administration fait accompli in this matter. A fait accompli easily fashioned by an administration heavily indebted to the major oil corporations.

What else can explain the incredibly poor performance of the President's Council on Environmental Quality in its recent OCS study which, among other major deficiencies, named Georges Bank the priority site based on environmental considerations that were in fact never considered?

But beyond that, we have other telltale evidence of this administration's flaunted courtship with the oil corporations.

A recent article in the Wall Street Journal, June 17, 1974, a publication, by the way, which has never been seriously accused of being antioil, should put to rest doubts that this administration would let sound policymaking stand in the way of political expedience.

That article points to the contents of a March 14, 1974, FEO report titled "Project Independence Management Program" which specifically indicates that the administration is running interference for and promoting the interest of the majors for a major lease grab on the Atlantic OCS.

The Journal article states:

> The (FEO) report also said that a(n) (inter-agency) task force would determine the kind of assistance a group of companies led by Sun Oil needs to proceed with a sampling program for oil and gas exploration in the Atlantic outer continental shelf.

If this report is true, and I have seen no denial of this accusation, then, of course, what we say here at today's hearing may be of little or no consequence in the short or long run in this matter.

I would respectfully recommend that the Subcommittee on Administrative Practices, which you chair, Senator, invite Mr. Sawhill to testify to determine the accuracy of this article in order to determine the legality, the propriety, and the ethics of the Federal Government acting in behalf of certain private corporations.

This situation exists, I believe, because the Nixon administration lacks the wisdom and intellectual capacity to deal forthrightly, competently, and innovatively with the fundamental and compelling issue of fashioning a sound national energy policy.

In September 1972, the Special Massachusetts Commission on Marine Boundaries and Resources, which I am privileged to chair, issued its recommendations to the legislature and to the Governor on the matter of offshore oil development.

The essence of those recommendations was that the Commonwealth of Massachusetts must oppose such premature OCS activity until the Federal Government fashions a national energy policy and a national marine resources policy; and until offshore technology has reached a fail-safe and clean level of operation and until oil spills can be contained in an open sea environment, which today they cannot be.

The special commission was unwilling to confine its inquiry to the narrow issue of OCS development alone. It refused to accept the premises it heard over and over again, first proffered by the American Petroleum Institute and then echoed by the U.S. Department of Interior and the Federal Energy Administration.

The slogan that a "country that runs on oil can't afford to run out," although clever and catchy advertising, does not fully examine the total energy equation, both the supply and the demand side; nor does it examine the fact that the major oil corporations now have controlling interests in gas, uranium, and coal reserves; nor does it examine the fact that for 14 years lower priced foreign oil was kept from consumers by the Oil Import Quota program while America's easily recoverable oil reserves were being seriously depleted; nor does it examine the fact that between 30 to 40 percent of all energy consumption in this country is wasted; nor does it examine the fact that a 10-percent rise in population during the last decade saw a corresponding 50-percent increase in energy consumption.

The National Academy of Sciences in its critique of the report raises serious questions about CEQ's uncritical acceptance of Project Independence, which, far from being a substitute for a national energy policy, is a mindless shibboleth. Its certain effects will be to tear open the Western States for oil shale and coal and to jeopardize Georges Bank and New England coastal resources.

The National Academy of Sciences critique points the way to honest analysis when it states:

> The CEQ report does not describe incremental costs of various applications of current technology to environmental protection . . . We recognize that in some instances the costs of safe operation and environmental controls may increase the cost beyond the level at which operations are economically attractive. In such a case, resources should be developed elsewhere under circumstances where total costs, with environmental costs properly taken into account, are less.

The NAS, National Academy of Sciences, then concludes by the eloquent statement:

> Importantly, the fact that environmental controls in such a case are costly should not be used for grounds for reducing the level of control, but rather should indicate that the development of that resource should be deferred to a time when the costs of environmental control are reduced through technological advances or the value of the resource increases.

This rational statement by the National Academy of Sciences is in extreme contrast to the cowboy economics and mentality of the Nixon administration, its Council on Environmental Quality, and the major oil corporations.

The CEQ report's ranking of Georges Bank as the highest priority without considering that area's value as an international fishing ground, I believe, puts to rest any doubts that the CEQ speaking for this administration employed any intellectual or professional honesty in preparing its report.

The targeting of Georges Bank for priority development is a spurious and pernicious effort to stampede premature OCS development. It is a low point to date in the performance of CEQ.

Georges Bank must become a symbol of protest against the continuing mismanagement of this Nation's energy and marine resources.

I personally will continue to recommend that Massachusetts oppose accelerated OCS development until such development has been analyzed and considered within the context of a sound national energy and national marine resources policies. As the National Academy of Sciences itself indicates, the consumption of oil and gas or energy needs could conceivably deprive future generations of the crude oil necessary to produce lubricants, greases, medicinals, plastics, pesticides, and fertilizers.

I want to see an energy policy that, by balancing the risks, costs, and benefits of alternative energy development scenarios, will provide the citizens of Massachusetts and indeed all Americans with the assurance that we are doing what is best for the present and what is best for the future.

In March 1972, at a meeting in the office of Secretary of Interior Rogers Morton, I expressed my position that Massachusetts must not risk and therefore must oppose offshore oil development until this Nation fashions a national energy policy.

Secretary Morton agreed and assured those present that the administration also saw the need and that a draft policy would be circulated for comment within 60 days.

Senator Kennedy, it has been over 2 years now and all we have been given is an energy crisis and a self-serving catch phrase, "Project Independence."

Senator KENNEDY. OK. Mr. Fitzpatrick, representing the New England Regional Commission.

Mr. FITZPATRICK. Thank you, Senator.

Senator KENNEDY. You have a longer statement here.

Mr. FITZPATRICK. That is right. I will keep it brief.

Senator KENNEDY. We will include it in the record. All the statements will be included in the record.

STATEMENT BY THOMAS FITZPATRICK, ENERGY PROGRAM DIRECTOR, NEW ENGLAND REGIONAL COMMISSION

Mr. FITZPATRICK. As you know, the Regional Commission is organized under title 5 and the executive committee, Governor Noel and Mr. Merriman. I appreciate the opportunity to have a statement made here, and, of course, other members of the Commission include Governor Sargent who is vitally effective.

The Commission has undertaken a comprehensive energy analysis and evaluation for the purposes of making policy recommendations to the Governors and all the public agencies and private agencies. Included in this effort will be energy supply/demand balance work. Some of that has already been completed. They are making projections as to what the energy needs of New England will be for 1980 and 1990.

I might add that throughout our entire work this is an intensive and immediate process which is going to result in findings and recommendations late this year and early next year. It is not a long-range multiyear type of effort. We are building on existing work wherever we can and only filling in the essential gaps that need to be filled in.

Included in our work will be an examination of the petroleum and gas questions that see us both including Outer Continental Shelf development and just the possibilities of, because there is a great deal of pressure for refineries right now, developing immediately the petroleum and gas industry in New England and expanding what is already here.

I might mention that we have had two workshops, one for State and Federal officials who have statutory responsibilities in the energy field, and one for the private sector including interested energy officials.

We note a great lack of being able to deal with the question or sense of futility. There is a need for regional and national policies in this matter, and the Commission is along with other agencies to fulfill that need on the regional level.

In conclusion, Senator, I would like to say, put it this way, I think we have two sets of questions that have to be answered that are closely related and intertwined. The first set of questions applies to the mineral resources of Georges Bank and other OCS areas being developed. The second set of questions relates to the economic, environmental, and social impacts of such development. I believe the

New England Regional Commission has made a commitment to a regional approach to these questions. If development is to proceed, the answers to both sets of questions must be compelling.

Two particular considerations should be kept in mind. The State should be allowed, or rather, encouraged to continue to participate as actively as possible in the Senate Ocean Policies Study, Project Independence and all forms of energy policymaking at the State and regional level. Also, I submit that the question, who needs to and should know, should be constantly entertained throughout such policy formulation. Participation must be widespread in order to develop realistic and acceptable policies.

I would like to conclude with that, Senator.

Senator KENNEDY. Well, on those two questions, have you taken a position? Has the Commission, itself, taken a position?

Mr. FITZPATRICK. We have not, Senator. We want to get the best thinking of everyone and include the people such as the interest groups that you have heard here today. We have begun that process, but until that is done, I don't think anyone should make any recommendations.

Senator KENNEDY. Are you planning to make recommendations?

Mr. FITZPATRICK. Yes.

Senator KENNEDY. Why don't you tell us when that will be ready?

Mr. FITZPATRICK. Those recommendations will be ready by very early next year. It is our current plan to be able to begin to discuss these with the Governors in December.

Senator KENNEDY. You are going to consider all the factors that have been brought out here and others as well?

Mr. FITZPATRICK. Yes, indeed. I might add, Senator, that we will be addressing the question you raised about procedures and processes, that is how all these questions are going to be handled. That is one of the things we are doing. I think that our work in examining institutional and legal relationships will be very important, and we have already inventoried the existing laws that relate to energy facilities, including Outer Continental Shelf development. The State and Federal laws will be reviewed to find gaps that should be filled and improvements that should be made.

Senator KENNEDY. Do you have in the Commission, itself, any departments that are primarily concerned with conservation or environment?

Mr. FITZPATRICK. Not solely for environmental issues, Senator. We take that into account with each program: Transportation, economic development, and energy.

[The complete statement of Thomas H. Fitzpatrick follows.]

STATEMENT BY THOMAS H. FITZPATRICK, ENERGY PROGRAM DIRECTOR, NEW ENGLAND REGIONAL COMMISSION

A REGIONAL APPROACH TO PROPOSED OUTER CONTINENTAL SHELF (OCS) DEVELOPMENT

Thank you Senator Kennedy for inviting me to appear before you today at this hearing on the Senate Ocean Policy Study. I am glad to participate because the subject matter—the development of the petroleum resources of the Outer Continental Shelf (OCS)—is indeed a most important public policy issue. I am additionally pleased to be here to talk about regional approaches to this issue because the New England Regional Commission is committed to a regional approach to

this and other aspects to the serious energy and environmental problems confronting New England.

Georges Bank as well as the Baltimore Canyon Trough and the Southeast Georgia Embayment constitute what is referred to as the Atlantic Frontier.

Today, in 1974 and 1975, we stand chronologically as well as geographically on the edge of this frontier. The decisions to be made in the next months and years could well be a turning point in the history of New England and for that matter the entire eastern seaboard of this country.

The energy policy effort recently initiated by the New England Regional Commission is going to—and in fact has begun to—grapple with the major energy issues confronting the region including the Outer Continental Shelf (OCS). We are selecting the best available intellectual and experienced minds that we can locate. We are organizing the first, comprehensive, full-scale regional examination of the energy situation including OCS. It is no long-term, multi-year research effort but rather an immediate, intensive analysis of the best available information, and only where necessary are we developing new base data in order to formulate regional policies in the very near future. By this I mean that results will begin to materialize within the next months and major recommendations will be forthcoming early next year. However, I can assure you the Commission's efforts and responsibilities will not cease at that point.

Therefore, I would like to take a few minutes to describe what the New England Regional Commission is doing in its attempt to answer these very serious questions about the region's energy future. First, we are developing a reliably consistent body of knowledge on past, current, and future energy demands in New England. This includes the following tasks: preparing material balances by state and region to determine more recent consumption and usage patterns for energy including import requirements and the establishment of useful consumption ratios for the purposes of making reliable projections including various determinants of demand. The forecast of economic activity and population starting with 1974 as a base year will be made for 1980 and 1990. At least three general scenarios will be developed (no overall economic growth, a "normal" rate of growth, and a growth in excess of the recent past). Subsequently, energy demands by state and region will be associated with these economic and population growth alternatives. Specific forecasts will be made for each alternative scenario. Supply constraints, fuel substitutes, and other integral, related issues will be addressed. We expect the output to be a comprehensive but readable and understandable report on New England energy requirements past and future, including a state by state and regional assessment of fuel demands for a series of economic growth scenarios which take into account differences in development policies among the six states. This information will provide the basis for: an appraisal of energy policies; economic, environmental, and social effects; power plant needs; the development of outer continental shelf resources; growth options; and other public policies which influence or are influenced by energy supply and demand. The results of this project will provide a foundation for analyzing the benefits and costs of expanding and/or developing the region's energy industry, and for anticipating energy facility siting issues.

Second, petroleum industry development is designed to determine: (1) the economic, environmental, and social effects of developing a petroleum refinery industry in New England; (2) the economic, environmental, and social effects of off-shore drilling in New England; (3) the economic, environmental, and social effects of *not* developing a petroleum industry in New England; (4) policies which would encourage adequate safeguards if encouraging a petroleum industry in New England is deemed to be the proper course of action. The task structure for this project includes review of existing data and studies on the petroleum industry and facilities. The Commission does not intend to reinvent the wheel. We will utilize and/or modify work already completed or in process. Basic data will be developed for off-shore oil and gas production including: (A) estimated quantities of gas and oil reserves and the likely rates of extraction; (B) likely time schedules of exploration and production; (C) manpower requirements; and (D) facility requirements. Economic analysis will include assessment of the effects on the following: (A) energy cost and supply; (B) supporting industry; (C) down stream industry; (D) direct and indirect employment and earnings; (E) tax benefits; and (F) service costs. Likewise, we will determine the environmental impacts including the effects on (A) air quality; (B) water quality; (C) solid waste loads; (D) noise pollution; and (E) land use.

Simultaneously the impacts of "do nothing" will be examined including looking at (A) energy supply—particularly its reliability; (B) energy cost; (C) economic development and employment; (D) environmental quality; (E) taxes.

The result will be a comprehensive analysis of the economic and environmental effects, and siting criteria for alternative forms of an indigenous petroleum industry, including data and information which can be used for evaluating various mixes of facilities across the region.

This information will be used in identifying and evaluating alternative courses of action relative to the supply of petroleum products in New England, including policy decisions on (1) number and type of refineries; (2) number and type of petrochemical plants; (3) port development and unloading, processing and storage facilities; (4) pipelines and distribution terminals; (5) off-shore drilling (when, where, how much?).

Third, gas industry development will be analyzed in the same way as oil development was with an eye towards developing the same applications of the outputs. Fourth, we are currently examining existing legal and institutional arrangements affecting OCS and will explore new ways of dealing with those questions.

What I have just described is only a small portion of the energy planning and policy formulation work which the New England Regional Commission has recently initiated. However, it is of direct relevance to the National Ocean Policy Study being conducted by the Senate Commerce Committee pursuant to Resolution 222.

Recently we have asked scores of people to review our energy program including that portion relating to Outer Continental Shelf (OCS) development. We have held a workshop for Federal and State officials who have statutory responsibilities in these areas. We have held a workshop for the private sector including people associated with the energy industry, and we have been interviewing decision makers and those who influence decisions. No matter who was being contacted, or from which state, whether he or she be an industrialist or environmentalist, a major supplier or a minor user of energy, a single characteristic attitude has emerged from these preliminary contacts. There is a pervasive sense of inadequacy to deal with the problems of energy in New England. Whether the problems be predictability and adequacy of supply of each of the needed forms of energy, prices, or decisions to locate any of the various facilities related to energy production in New England, those who are concerned and would attempt to make their voices heard no matter what their position feel their efforts to influence decisions are to a great extent futile. The sense of futility is not evident on the surface—because no environmentalist who fights a local facility citing situation is likely to view the energy supplier or distributor as powerless and because no supplier/distributor faced with years of attempts to locate a facility views the environmentalist as powerless. It is not in the advocacy situation of the brush fire activities of the various interest groups that powerlessness occurs. It is in the context of doing something about the basic energy problems of New England and setting the policies and values into operation for solution of those problems that inadequacy occurs. Even at this preliminary stage of contacts outside of our organization—and I say preliminary because we intend to make wide use of outside resources—these observations are indicating an important area of concern, an area which only can be dealt with from a regional point of view, and through an ability to relate the components of the problem to regional and national solutions. It can be stated even at this point that the role of the New England Regional Commission has been confirmed by these contacts and that role is one which can uniquely be performed by the Commission. It is a leadership role in the seeking of solutions to regional problems.

Finally, Senator Kennedy, I will like to conclude on this note. Two major sets of questions closely related and intertwined must be answered. The first set of questions relate to: why should the mineral resources of Georges Bank and other OCS areas be developed. The second set of questions relate to the economic, environmental and social impacts of such development. I believe in and the New England Regional Commission has made a commitment to a regional approach to these questions.

If development is to proceed, the answers to both sets of questions must be compelling. Two particular considerations should be kept in mind. The states should be allowed—nay encouraged—to continue to participate as actively as possible in the Senate Ocean Policy Study and indeed in all planning and policy formulation concerning OCS. Also, I submit that the question "who needs to and should know?" should be constantly entertained throughout such policy formula-

tion. Participation must be widespread in order to develop realistic and acceptable policies.

The wealth beneath the sea represents to many a vision. But this vision is like dream whose outlines are only vaguely discernible and that dream must not become a nightmare. Therefore, to paraphrase Harold Laski we must ask, "In whose behalf is the dream being dreamt?"

Senator, I would like to submit a copy of the New England Regiona Commission's energy work program for the record and I and the New England Regional Commission thank you for the opportunity for appearing here today.

Senator KENNEDY. OK. If I could just ask a couple of questions, which I am sure this panel is interested in and perhaps the others who have testified here as well, with regards to the Interior Department policies.

Mr. Kelly, one of the things we have considered here today is an adjustment or change in the bidding and bonus structure so that we, in Massachusetts and New England, could get a better shake in terms of the revenue which will be generated anywhere from $700 million to $4 billion. Now, is the Interior thinking seriously now of suggesting a formula so that we will benefit here in Massachusetts and New England?

Mr. KELLY. I would have to say I believe that it is. I don't know for certain, Senator. I have not been involved in that particular area, but clearly the Congress, especially the Senate, is considering the amendments to the Outer Continental Shelf and are addressing that question.

Senator KENNEDY. There are bills that are being considered by the Congress, S. 3221 and 2672, 2922 and 2389, which seek to divert revenues from U.S. Treasury to adjacent coastal and other States.

Your statement on those bills, at least the Interior Department's, is that you oppose such provisions, that the receipts from the Outer Continental Shelf, lands from OSC oil and gas leases belong to the Federal Government and currently make a substantial contribution to Federal income; that if such revenues were diverted to coastal and other States as the bills provide, the Federal Government would need to increase its income from other sources. The Department also feels that the bills adopt an inflexible allocation of funds to States without regard to the need of resources.

So I think that—at least at this time—the Interior Department's position has been in opposition to sharing this revenue to working out a formula. We are going to try to see if we can alter or change that attitude or viewpoint. And certainly I think, in listening to Mr. Chadbourne of the Associated Industries, a good deal of the support for exploitation of those resources, is with the expectation that it is going to have some kind of direct beneficial impact in terms of the consumers, in gasoline and home heating oil prices. We have about 10 percent, 10.8 percent of our population that are senior citizens. Many of them are in an extremely tight bind in terms of price allocation of fuel and home heating oil. Our industries are heavily pressed in terms of their competitive situation.

But, as I understand it, and so that we know where we are, the administration, at least today, opposes any kind of revenue sharing. I will put the full document in the record, it is a letter from the

Under Secretary of the Interior to the chairman of the Interior Committee.

[The document referred to follows.]

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., May 4, 1974.

Hon. HENRY M. JACKSON,
Chairman, Committee on Interior and Insular Affairs,
U.S. Senate, Washington, D.C.

DEAR MR. CHAIRMAN: This responds to your request for the views of this Department concerning several bills which deal with the energy resources of the Outer Continental Shelf, S. 3221, S. 2762, S. 2858, S. 2922, S. 2389 and S. 3185.

We recommend that none of these bills be enacted, since appropriate action with respect to OCS energy resources can be taken under existing law.

THE BILLS

S. 3221 would require the Secretary of the Interior to undertake a program of promoting petroleum production from the Outer Continental Shelf subject to new environmental and safety requirements. The Outer Continental Shelf Lands Act would be amended to declare that U.S. policy is to make available for leasing prior to 1985 all OCS lands determined to have geologically favorable potential and be capable of development without undue environmental harm. To carry out this policy the Secretary would be required to develop a leasing program, specifying the size, timing and location of leasing activity that will best meet energy needs for the ten year period following approval, subject to certain criteria directed toward overall resource management, geographic decentralization of leasing and receipt of fair market value for public resources. An open nomination procedure would be established for areas to be leased or excluded from leasing. The bill specifies matters to be included in the environmental impact statement for leased areas and authorizes the Secretary to obtain all information from public or private sources necessary to make evaluations required by the Act.

The bill would also require the Secretary to undertake a major OCS oil and gas survey, including geologic investigations and drilling, and a mapping program. No part of the survey and mapping program would be considered a major Federal action under the National Environmental Policy Act of 1969 except drilling exploratory wells. Persons holding leases or permits for oil or gas exploration or development on the OCS would be required to provide the Secretary with pertinent information concerning the area which the lease or permit covers. In addition, the Secretary would be required to carry out a research and development program to improve technology related to development of OCS oil and gas resources.

The bill provides for a safety and environmental protection program which would include (i) safety and environmental standards for equipment used in OCS exploration, development and production, (ii) equipment and performance standards for oil spill cleanup plans and operations, and (iii) a safety regulation enforcement program which includes specified Federal inspection of OCS operations. Issuance and continuance of leases would be conditioned upon compliance with such regulations. A standard of strict liability for oil spill damages would be imposed on leaseholders except where damage is caused by war or the damaged party.

Section 8 of the Outer Continental Shelf Lands Act would revised to specify that bidding for OCS leases on a "net profit" basis is allowed, in addition to bonus bidding, but royalty bidding would be excluded. The bill would also permit the Secretary to sell Federal royalty oil by competitive bidding and would prohibit him from continuing leases which would otherwise terminate, unless there is a reasonable assurance of production from such leases within the period of an extension. Additional provisions are included to assure full development and maximum production from OCS leases, including a General Accounting Office audit of shut-in wells, Secretarial unitization or cooperation or pooling agreements, and review authority for development plans.

Five percent of OCS revenues would be paid into a newly created Coastal States Fund, subject to a $200 million per year maximum. The Secretary would be au-

thorized to make grants from the Fund to coastal States to ameliorate adverse environmental effects and control secondary social and economic impacts associated with development of Federal OCS energy resources. Secretarial regulations for administration of the Fund would include requirements for grant eligibility, with the proviso that no grant could be made for more than ninety percent of the cost of activities to be conducted under the grant. The Secretary would also be authorized to negotiate with a view to developing interim agreements to permit energy resource development prior to final judicial resolution of disputes relating to such resources. The President would be authorized to establish procedures for resolution of international or interstate boundary disputes.

S. 2858 requires the Secretary to prepare within 6 months of enactment a leasing schedule of all OCS areas to be leased in the ensuing five years. The schedule must include an assessment of relative hazards to the environment, or commercial or recreational uses of adjacent ocean and coastal areas, of operations in each area, compared to the environmental hazard in all other areas under consideration in the leasing schedule. Broad authority is provided for the Secretary to obtain information necessary to assist him in making the assessment. Within the earlier of (1) one year after enactment or (2) promulgation of the five-year leasing schedule and assessment of environmental hazards, the Secretary would be prohibited from taking steps to lease any area until other areas having a lesser hazard to the environment or commercial or recreational uses have already been leased or the leasing process for such areas has already begun. New leasing schedules and environmental assessments would be required at not less than five year intervals.

The bill also would establish a policy of insuring, "through improved techniques,maximum precautions, and constant use of the best available technology by well-trained personnel, the safest possible operations in the Outer Continental Shelf." A number of fixed requirements to implement this policy are set forth in the bill together with an elaboration of procedures to be followed in imposing safety requirements. Additional enforcement provisions and civil and criminal penalties are included in the bill. The bill also imposes strict liability for unlawful oil spills up to $15 million and subject to the defense that damage resulted from an act of the injured party or an act of war or government. Liability in excess of $15 million would be subject to ordinary negligence rules.

S. 2672 creates a Marine Resources Conservation and Development Fund into which would be paid seventy percent of the revenues from OCS leases after enactment. Thirty percent of such revenues would be paid to the coastal state adjacent to the lease to be used for conservation purposes. The Marine Resources Conservation and Development Fund would be available to the Secretary of Interior for "broad and varied marine resources conservation and development programs." A newly established Advisory Board would be established to assist the Secretary in carrying out his functions in using the Fund, and Regional Environmental Review Boards would be established to review the adequacy of provisions of law and regulations to protect the environment and to monitor enforcement actions, make recommendations to the Secretary, and hold public hearings in connection with administration of the Act.

S. 2922 would provide that sixty percent of revenues from OCS leases after enactment would be paid to the adjacent coastal states without limitation on use except that (i) rentals, bonuses or revenues other than royalties shall be included only if necessary to produce revenues of $50 million in each state and (ii) if revenues attributable to a state in any one year exceed $25 million the share of the excess over that amount shall be reduced in accordance with a schedule of percentages ranging from 45 down to 10 percent on the excess over $50 million.

S. 2922 also requires the Secretary within one year after enactment to conduct a comprehensive study and collect all relevant data on OCS areas "potentially available for exploration of oil and gas resources," but not yet leased pursuant to the Act. No leasing could be conducted on any area until the study of that area was completed.

On the basis of the study and other specified procedures, the Secretary would also be required to designate (i) priority areas having the greatest potential for development of oil and gas resources and the least risk of environmental damage (ii) areas of critical environmental concern in which leasing should be prohibited. The bill specifies certain sources from which the Secretary would gather information, including non-governmental parties. All such information must be made available to the public but, unless otherwise provided by law or the Act, individual company data obtained would be kept confidential for one year except as necessary to carry out the bill's provisions. Public hearings would be required in

coastal areas affected by leasing and the consent of the Governor of any affected coastal state would also be required.

The bill imposes several additional leasing requirements. The Secretary must make public sixty days prior to entering into any lease the term of a lease, the background information obtained for the area in which the least is located, and, upon request, bids and supporting materials. Special conditions to take the background information into account could be imposed in any lease and specific authority would be given to allow the Secretary to give preference as to the oil and gas produced to the area affected by the lease. The bill also requires the Secretary to impose specified production requirements and to conduct a survey of 'producing, shut-in' wells.

S. 2922 also adds a requirement that no lease be issued until the Federal Trade Commission and the Department of Justice determine that it will not involve an antitrust law violation. Also required would be a Secretarial report with recommendations for promoting competition and maximizing revenues from OCS leasing and a plan for implementing such recommendations. The report would be required to consider various bidding systems, measures to ease entry of new competitors and measures to increase supply to independent refiners and distributors.

The Environmental Protection Agency would be given authority to prescribe and enforce environmental protection regulations and an Outer Continental Shelf Operations Advisory Board would be established. The bill would also require States to prepare a report like the environmental impact statement which Federal agencies are required to prepare under the National Environmental Policy Act before construction or development of any kind is permitted on navigable waters, as defined in section 2(a)(2) of the Submerged Lands Act. The bill also imposes strict oil discharge responsibility up to $100 million, subject to certain defenses including the defense that the discharge was caused by act of war or by negligence of the damaged party. An Outer Continental Shelf Liability Fund would be established to pay claims in excess of those recoverable against private parties (up to $100 million). Owners and operators of vessels would be liable only up to $14 million. The Fund would be constituted and continually replenished by a five cents per barrel fee imposed on OCS production.

The bill would also require the Secretary to establish and maintain on OCS lands a reserve operating capacity for ninety days production of an amount of oil equal to one-fourth of 1972 crude oil imports.

S. 2380 requires a distribution of OCS revenues from leases after enactment (i) 50% to the adjacent coastal state (ii) 25% to other states, and (iii) 25% to the Federal government.

S. 3185 specifies a formula for determining Federal OCS revenues in addition to the cash bonus for each lease executed after enactment. Under the formula, the Federal government would receive sixty percent of the well head value of oil and gas produced after deduction of production and exploration costs. Such costs would be limited to forty percent of the well head value of oil and gas produced, except that the Secretary could allow additional costs associated with secondary recovery methods. Exploration and production costs could be carried over from year to year. The Secretary would also be given discretion to reduce the 60 percent Federal share to 50 percent and to require that not over 16 2/3 percent of the Federal entitlement be paid in kind. The Secretary would have authority to prescribe regulations and lease terms including imposition of rentals.

Discussion.—We agree generally with many of the essential objectives of these bills, but recommend against their enactment at this time. The existing Outer Continental Shelf Lands Act permits substantial latitude for adjustment to changing circumstances and our program for development of the OCS can be fully carried out under the present law. Significant changes in that law could seriously delay achievement of the degree of national energy independence which we believe is vital.

Discussed more specifically below are some of the more important respects in which we believe provisos of these bills are either unnecessary or undesirable.

Scope of leasing program.—Provisions limiting or otherwise modifying the scope of the OCS leasing program are undesirable. For example, the goal stated in S. 3221 of leasing all available prospectively productive OCS lands by 1985 is unrealistic and implies a rapid rate of development which may involve undesirable environmental or other effects and which is far in excess of that presently planned. Our best estimate of the next appropriate change in the scope of the OCS program is to lease some 10 million acres in calendar year 1975. We believe that the rate of leasing implicit in S. 3221 would dispose of vast OCS acreages without increasing

petroleum exploration and production beyond that achievable under the current program. The current leasing program is sufficiently large that availability of drilling rigs will be the main limiting constraint rather than availability of unexplored leases. Conversely, the requirement in S. 2858 that all areas be ranked by expected productivity and hazard to environmental, commercial and recreational factors and be made available for development so that the most environmentally safe areas are leased first is unduly restrictive. We lack information and administrative ability to carry out this task, even if it were desirable to do so. Complying with this bill's limitations could well result in a moratorium on leasing vitally needed OCS energy resources.

Furthermore, the CEQ study has concluded that leasing can be carried out in the areas included in that study if appropriate safety and environmental requirements are adhered to in each area. We intend to require of the industry whatever design criteria and practices are necessary to meet the CEQ concerns.

In contrast, the present law provides sufficient flexibility for an appropriate balancing of energy and environmental factors. Our concern is to improve the leasing system within the present framework and in this connection the Department recently has adopted a two-tier system for designating tracts to be leased. Under it industry nominates promising areas and the public at large is invited to comment on environmental and other considerations bearing on tract selection. Based on this and its own independent review, the Department then specifies areas to be leased.

A related consideration is the specific study or other requirements found in several of the bills which are prerequisites to leasing. S. 2922, for example, requires completion of a very comprehensive study and also mandates that the consent of adjacent coastal State governors be obtained prior to leasing. We concur in the need for adequate study of areas to be leased. Present law adequately provides for this through the National Environmental Policy Act and the Outer Continental Shelf Lands Act, and our policy is to expand our capability rapidly for determining all the facts necessary to a balanced leasing program. We also agree that consultation with coastal States is appropriate but requiring consent of their governors is unwise in view of the broader national aspects of the OCS program.

Lease offering and conditions—competition and other economic considerations.—The OCS Lands Act provide that leasing of OCS lands shall be by competitive sealed bidding on the basis of a cash bonus bid with a fixed royalty on a bid royalty with a fixed bonus, but in no instance can the royalty be less than 12.5 percent. The leases are for a five year term. These provisions are sufficiently flexible for institution of the most desirable alternative leasing systems to promote competition while serving the public's interest in receiving a fair return for its resources and using those resources in the most responsible manner.

Different methods of bidding for OCS leases are under constant consideration. Bonus bidding has historically been used for Federal OCS leasing, but the Department is committed to a test royalty bid offering not later than the September 1974 OCS lease sale. Although this experiment is a royalty bid experiment, we believe that the information developed will tell us enough about both bonus and royalty bidding to indicate whether further consideration of other possible bidding methods is justified. We are also examining the feasibility of a number of other systems such as profit sharing, installment or contingency bonus payments.

We are opposed to mandating any single system which would result in a loss of the flexibility which the present Act provides. Imposition, for example, of the net revenue sharing formula in S. 3185 would be highly undesirable, even though such a leasing system may have advantages (as well as disadvantages) compared to other leasing methods.

We also oppose the provision in S. 2922 specifically requiring FTC and Justice Department review and approval of each lease for antitrust law violations. Normal antitrust inforcement procedures are adequate to assure compliance with those laws and individual lease reviews would unduly disrupt the OCS program. In addition, the bill's requirement that Interior report on ways to promote competition is unnecessary in light of our present continuing effort to develop more competitve leasing system.

Safety and environmental programs.—The need for constantly improving our environmental protection and safety programs is clear and we concur in the broad objective of several of the bills to achieve this end.

The Interior Department is, however, implementing the present OCS Lands Act in accordance with the National Environmental Policy Act to insure that these considerations are adequately taken into account. Provisions such as those

contained in S. 2858, S. 2672, S. 2922 and S. 3221, are unnecessary as the actions are authorized under existing laws. Also such provisions might be detrimental if transitional problems of complying with their provisions delay current studies or other actions we are currently undertaking to improve environmental protection and other requirements. Moreover, complying with such elaborate procedures as those mandated in section 4 of S. 2858 (particularly new sections 10 of the Act) could well hinder prompt and balanced development of environmental and safety requirements. And we oppose specifically the undersirable fragmentation of responsibility which would result from assigning safety and environmental regulation responsibility to the Environmental Protection Agency, as does S. 2922.

The Department is undertaking preparation of a full environmental impact statement on the new 10 million acre leasing program pursuant to the National Environmental Policy Act. The Council on Environmental Quality has recently completed a study of OCS leasing, which includes a number of recommendations which we believe will improve our administration of the OCS program. These and other actions will, we submit, appropriately serve the objective of insuring safety and environmental protection.

Research and Development.—A strong research and development program is essential both with respect to energy and environmental aspects of OCS mineral development. It is, however, being accomplished under existing law and several provisions in the bills under consideration might, if enacted, actually adversely affect the R&D effort. Mandating a wide range of studies by different agencies, as does S. 3221, may preclude desirable coordination and executive flexibility. S. 2672 would channel funds on an arbitrary basis to states and thereby constitute an unwise diffusion of R&D efforts.

Public information and participation in OCS decisions.—Assuring that the public has access to information needed to make intelligent decisions with respect to OCS energy resources and an adequate opportunity to participate in OCS program decisions is essential. Equally important is the desirability of developing a more extensive resource information base.

The Interior Department presently has the necessary authority to pursue these objectives. Consultations with industry representatives, environmentalists and others are presently underway concerning the advisability of an exploratory program. The present OCS Lands Act permits the Department to require that permittee furnish us with data obtained during exploration and we expect to reach conclusions about what should be done in this regard shortly.

It would not be appropriate to amend the OCS Lands Act at this time to require the development of specific informational programs. To illustrate, the survey and mapping program required by section 202 of S. 3221 would impact quite heavily and perhaps undesirably on our OCS program. If enacted, this provision would require that a survey of OCS oil and gas resources be conducted and that the Secretary maintain a current series of detailed topographic, geological, and geophysical maps of and reports about the OCS. Maps for all areas under lease or proposed for leasing prior to July 1, 1977, would have to be prepared and published prior to July 1, 1976; maps of areas proposed for leasing after July 1, 1977, would have to be prepared and published not later than six months prior to the last day for submitting bids for the areas offered for lease; the maps of all propsective areas must be prepared and published not later than ten years after the date of enactment.

Under these provisions a plan for conducting the prescribed survey and mapping programs would have to be submitted to Congress within six months after enactment. A progress report to Congress, including a summary of initial data compiled, would be due within 20 months after enactment, and progress reports would be required on an annual basis thereafter. Conducting such an extensive mapping and survey effort would be extremely difficult, especially within the time frame set forth, and would not likely produce results justifying the effort. Again our present program undertaken pursuant to existing authority and modified as needs change, should be satisfactory.

Moreover, since the bill's provisions would exempt all actions other than the drilling of exploratory wells from classification as a major Federal action for the purposes of Section 102(2)(C) of NEPA, it would seem that exploratory wells must therefore be considered major Federal actions. Requiring an EIS could significantly delay the drilling of exploratory wells that are important to the conduct and completion of the survey and mapping programs prescribed under S. 3221 and could result in unnecessary delays in the preparation and publication

of the prescribed maps and in the development of information important to an effective and expeditious leasing program for OCS lands.

Similar objections appear in several of the other bills. S. 2922 imposes several data gathering requirements in section 3 (adding a new section 15 to the OCS Lands Act) which are costly and may be virtually impossible to obtain within the time frame set forth. The impact of the study requirement is particularly serious because of the bill's requirement that no leasing be conducted in any area for which the study has not been completed.

Distribution of OCS revenues.—Several of the bills (S. 3221, S. 2672, S. 2922, S. 2389) would divert revenues from the U.S. Treasury to adjacent coastal and other States and we oppose such provisions. Receipts under the Outer Continental Shelf Lands Act from OCS oil and gas leases belong to the Federal Government and currently make a substantial contribution to Federal income. If such revenues were diverted to coastal and other States, as the bills provide, the Federal Government would need to increase its income from other sources. Also the bills adopt inflexible allocations of funds to such States without regard to need or resources.

To summarize, the bills before the Committee deal with the major issues relating to use of the energy resources of the Outer Continental Shelf. To meet our present energy needs, however, we believe that the present OCS Lands Act provides a satisfactory framework and that further legislation such as that before the Committee is undesirable or unnecessary.

The Office of Management and Budget has advised that there is no objection to the presentation of this report from the standpoint of the Administration's program.

Sincerely yours,

JOHN C. WHITAKER,
Under Secretary of the Interior.

Senator KENNEDY. I think New Englanders have to recognize we are going to have a difficult time. I gather from the testimony that has been given here, we would assume the significant part of the risk, and the very direct impact of offshore development in the areas which were outlined today. We heard from Dr. Devanney earlier about the spills that could come on shore and the blight that that would create.

We heard later from Dr. Bostwick Ketchum about the lasting effects of the Falmouth spill that we had some years ago.

FROM THE FLOOR. Five.

Senator KENNEDY. Five years ago and still the impact on marine resources is considerable.

So we are assuming if we meet the problems, if we recognize what the National Academy of Sciences said, the risk is certainly a good deal more considerable than the CEQ report has stated. We know that only a limited amount of studies have been done in terms of the impact that these spills have on marine resources. Testimony here this morning has been that it might not be as great or significant as one might think. But I have also been impressed by the fact that very little has been done on it and very little is being funded in terms of the Federal Government in trying to resolve those particular questions.

In spite of those that suggest we might easily dismiss this as an item of major concern, I am not one that believes that we should. A good deal more ought to be resolved on this. The Federal Government will get $700 million if it leases Georges Bank, but is only spending $7.4 million to help States formulate plans under the Coastal Management Act. We need good coastal zone planning to deal with the impact that would result from drilling on Georges Bank. Yet only $7.4 million is available of which Massachusetts gets $210,000. On the other hand $700 million would go to the Federal Treasury. With

the kinds of potential impacts offshore development can have in terms of our coastal areas, for example those pointed out by Barbara Heller, we need to resolve this situation before drilling begins.

I think we in the Congress are going to have our work cut out for us, first of all in getting adequate funding for the kinds of marine research programs which are really essential to resolve some important questions. I think we have to insist that States like Massachusetts share in the financial benefits that will come to the Federal Government since we are going to bear a heavy part of the burden.

Then I think, as was testified to this morning by Mr. Swatek and others, we have a responsibility to look at this in terms of the total picture of national energy resources and how important this is if we are to balance the risk. I am also absolutely convinced a great deal more can be done in terms of conserving energy.

If we required, as I mentioned earlier, that every car in this country get 30 miles to the gallon or 35 miles to the gallon, the savings in terms of oil would be overwhelming in this country. There are other areas that have been mentioned here today, for example more mass transportation to reduce dramatically the use of gasoline. I am not satisfied that we are giving this full attention.

And finally, let me say to my friends in Interior that I am aware of the fact that the Bureau of Land Management completed an environmental baseline study in northeastern Gulf of Mexico on June 25, and that it is also my understanding that drilling began there a little over a week later on July 7. This does not give those legitimately, seriously concerned people who live within these communities and are concerned about the fragility of many of these resources, any confidence in administrative decisions. This is something that I return to Washington committed to see that we avoid as it is applied to those of us here in New England. But generally it should be avoided as it is applied to any part of the country. It just is not right.

And finally, to our friends in the fishing industry, as one who is cosponsor of the 200-mile limit bill, there is certainly new hope for that industry. It has been one which has not received the kind of support in the past that I think it should have, or believed that it should have, to assist it in competing against foreign nations which effectively subsidize their industry. They have extraordinary kinds of problems, not only in facing the oceans in old ships but also due to the kinds of problems that they have faced because of the failure of other countries to abide by conservation measures. Now there is, I think, some real hope for rejuvenation within that industry, I think that we have to protect marine resources, not just to preserve an industry, but for the national interest, to preserve a food resource not only for this country but for the world. This is of great importance.

I want to thank the witnesses that have testified here today and to thank those who attended this hearing. We will take these views back to Washington and insure that they are reflected in our ocean policy study which is making legislative recommendations to the Congress for changes and adjustments to insure the protection of the ocean and its resources. It is an ongoing and continuing responsibility to which those of us who serve on that study are committed. The Administrative Practice and Procedure Subcommittee is going to be following closely the procedures and practices of the various agencies of Government

to make sure that the kinds of comments and suggestions made here today are taken into account and to make sure that the issues which have been developed here this morning are fully and fairly considered.

I want to thank the witnesses for being here.

The subcommittee stands in recess.

[Whereupon, at 12:45, the hearing was adjourned.]

FEDERAL PROCEDURES RELATING TO OFFSHORE OIL AND GAS DEVELOPMENT

MONDAY, OCTOBER 7, 1974

U.S. SENATE,
SUBCOMMITTEE ON ADMINISTRATIVE
PRACTICE AND PROCEDURE,
OF THE COMMITTEE ON THE JUDICIARY,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10:08 a.m., in room 3110, Dirksen Office Building, Senator Edward M. Kennedy (chairman of the subcommittee) presiding.

Present: Senators Kennedy (presiding), Pastore, Tunney, and Stevens.

Also present: Thomas Susman, counsel, and Ann Landman, research assistant.

Senator KENNEDY. The subcommittee will come to order. Our hearing this morning will focus on the procedures and plans of the Federal agencies responsible for determining the need for, and charting the pace, scale, and character of, offshore oil and gas development. The exercise of this responsibility must reflect a sensitivity to social, environmental, and other human needs, as well as a responsiveness to our national energy demands. And the public must understand what those agencies are doing, the public must participate fully at each stage of the process, and the public must ultimately be confident that the broadest public interests are served by any final decisions.

The issue of offshore oil and gas development is vital not just to the people in the coastal States, but to every American citizen. Our No. 1 problem in the Nation is inflation. And fuel costs have been one of the primary causes of the unacceptable increase in the cost of living.

If offshore oil drilling will help reduce those costs; if it can be done without jeopardizing our environment; if it can be done without destroying local fishing, tourist, and other industries; if it can be done in concert with rational coastal development; and if we can be assured—before the fact—that the public at large and the region affected will receive a fair value for its resources, then I doubt that many serious opponents of offshore drilling will be found.

What Congress and the public are looking for are assurances that offshore resource development is being pursued by the administration as a part of a rational national energy policy which is sensitive to these other considerations.

We find instead that the administration appears bent on leasing 10 million acres of public offshore lands to private oil companies in 1975—within the next 15 months—regardless of other considerations.

In fact, it now appears from Department of the Interior officials that up to 18 million acres could be placed on the auction block next year to insure that the 10 million-acre target is met. That figure includes frontier areas such as the North and Middle Atlantic and the Gulf of Alaska, where there is substantial dispute over whether we have sufficient information to judge the extent of environmental damage or the extent of economic dislocation in the adjoining coastal States.

It even appears that this decision will be made without adequate information on the extent of the resources that are beneath the sea. At the same time there are strong indications from industry spokesmen that the oil industry is not capable of developing 10 million offshore acres immediately, let alone bidding at a level necessary to assure the public of a fair return for these resources.

The decision to lease 10 million acres comes prior to the completion of the national ocean policy study. It comes prior to the completion of coastal zone management plans by States acting under Federal legislative authority to develop coherent plans for their coastal areas. It comes with serious information gaps cited by the Council on Environmental Quality and by a National Academy of Sciences review panel. And it even comes before the completion of the administration's own Project Independence blueprint.

The Interior Department staff was directed on September 18 to draw up a schedule for leasing 10 million acres of offshore lands—8 days before the Federal Energy Administration held its Project Independence hearing in Atlanta on the merits of offshore development. It gives the Project Independence hearings the appearance of a public relations show to lend credibility to decisions already reached.

But equally disturbing, the decision seems to have been made to hand over public resources on public lands before the Government has obtained sufficient information to determine what those lands are worth. At this time the Government is relying almost entirely on information purchased from the oil industry. Yet there remain serious questions whether this information is complete, reliable, or adequate to provide a foundation for a projected offering of up to 18 million acres.

At best we are playing roulette with some of our Nation's most most valuable resources. At worst, we might find ourselves looking back on this lease sale as the second Manhattan Island purchase and the revenues we receive could well constitute the equivalent of $24 worth of beads, cloth, and trinkets. It would foreclose the option of a national oil and gas reserve. The Senate adopted an amendment that I offered recently to require the Secretary to set aside tracts for the development of a national strategic energy reserve, which would give us at least some additional leverage in the event of a boycott such as the one we experienced last winter.

These additional safeguards, which were felt by a majority of the Senate as necessary to protect the public interest, will be beside the point if the current Interior Department plans are carried forward.

And all of the concerns reflected in our legislative efforts become

intensified by the continual lack of forthrightness by the administration on its intentions.

Secretary Morton previously assured us that no leasing in the Atlantic would take place until a settlement of the jurisdictional dispute between the States and the Federal Government. Yet that matter is still before the courts.

Federal Energy Administrator John Sawhill stated to me 9 days ago regarding Georges Bank Development: "Of course, FEA will not recommend such development until more conclusive analyses show the area to be suitable for oil and gas production and without adverse environmental consequences."

Similarly, a week ago in testimony in California, David E. Lindgren, the Interior Department's Deputy Solicitor, stated: "The decision whether to lease and what areas, if any, to lease has not been made and cannot and will not be made until next summer at the earliest."

Today we want to sort through the conflicting and contradictory signals given by administration officials and to determine precisely what their policy is, what their plans are, and what procedures they have adopted to carry them out.

We want to find out how the decision to lease 10 million acres next year was reached, and whether it is final. We want to know what information they have and what information they need, to guarantee that the public interest is being fully protected, from both a social and an economic standpoint. And we want to make sure that the Outer Continental Shelf leasing program is fully coordinated with the Government's other programs designed to meet our Nation's energy needs.

Our first witnesses this morning are Jared Carter, Deputy Under Secretary, Department of the Interior, and Duke Ligon, Assistant Administrator for Energy and Resource Development of the Federal Energy Administration.

Mr. Carter has been Deputy Under Secretary for the past 2½ years. Prior to that time he was Deputy Director for Ocean Affairs of the Department of Defense and also served as an Assistant Legal Adviser for the Department of State. He is a former clerk of Supreme Court Justice William O. Douglas. Mr. Carter is representing the Department of the Interior.

Mr. Ligon is representing the Federal Energy Administration. Mr. Ligon has been a witness before this committee in the past when he was Assistant Administrator for Policy Planning and Regulations for FEA and was concerned with the allocation program. From March to December of 1973 he was Director of Oil and Gas for the Department of the Interior. Mr. Ligon also served as an executive secretary of the Oil Policy Committee since 1971 and has been adviser to Secretary of the Treasury John Connally, Secretary of the Treasury George Shultz, and now Secretary Simon.

Prior to coming to governmental service he served as administrative assistant for the Continental Oil Co. Mr. Ligon has also served in Vietnam on General Abram's briefing staff.

We are pleased to have you before us today. Let us start off with Mr. Carter.

STATEMENT OF JARED E. CARTER, DEPUTY UNDER SECRETARY, DEPARTMENT OF THE INTERIOR, ACCOMPANIED BY DWIGHT PATTON, BUREAU OF LAND MANAGEMENT

Mr. CARTER. Thank you Senator. I also have with me Mr. Dwight Patton from the Bureau of Land Management who will help me with any of the technical questions that I do not know the answer to.

Let me just briefly start by giving you a very short summary of what we have done in the past in scheduling OCS leases and what our approach is now for attempting to meet the 10 million acre leasing goal in 1975.

Since 1971, we have attempted to publish a schedule of OCS leasing that goes 5 years in advance of a particular time. The latest leasing schedule was published in July 1973, I believe, which projected leasing schedules for 5 years in advance. That was in response to the policy decision reflecting the necessity of increasing our leasing level to 3 million acres a year from the rather leisurely pace that had existed before that time.

That proposed leasing schedule, in July of 1973, included all three of the lease sales that are now on our schedule for 1975. That is true in the Gulf of Mexico and one southern California lease sale, which we are presently are doing environmental impact statements on and will be subject to a final decision whether or not to go ahead with a lease sale within the future months as these environmental impact statements are completed, as the necessary resource studies are completed, and as the other information necessary for a decision is brought together.

Senator KENNEDY. How do you explain the statement that was made out in California by Mr. Lindgren, Deputy Solicitor for the Interior Department, about 10 days ago. It says a decision whether to lease and what areas, if any, to lease has not been made and cannot and will not be made until next summer.

Mr. CARTER. There is absolutely no inconsistency between that statement and the necessity of establishing a leasing schedule.

What a leasing schedule amounts to, and I have here a copy of the 5-year schedule that we published in July of 1973, is really a mechanism to bring to bear our internal capability, industry's capability and the public's awareness to the areas that are being subjected to intensive study for potential leasing.

There is no decision to lease in any particular area that underlies the structure of the leasing schedule. What that schedule does is zero in on certain areas for us to make the environmental impact studies required by law and equally, if not more important, for us to do the kind of resource studies in depth that are required if we are to pass judgment on the adequacy of the bids that we receive for leases that are eventually offered for sale.

If we do not pinpoint these areas, 8, 9, 10 months, hopefully even a year in advance, so that we can budget for our studies there, so we can allocate manpower and so that industry can zero in on them and

the public can, then we would be willy-nilly studying the entire OCS and trying to pick out a few million acres here or there out of literally hundreds of millions of acres potentially available for lease sale. So an important point to get across is that a schedule is really a method of allocating effort.

There is no decision, and cannot be as a matter of law, to hold a lease sale until all of the requisite environmental and other studies have been done of the areas that are scheduled. Now if we were to study the entire OCS first and then decide to hold lease sale, then get around to it, it would be extremely wasteful of the taxpayers' money and of all of our time.

But let me proceed.

Senator KENNEDY. First, we want to welcome Senator Pastore.

Mr. CARTER. Senator Pastore.

Senator KENNEDY. We just started off with Mr. Carter, Senator Pastore. He is making some opening comments at this time. I don't know how long you will be able to stay with us, but we were trying to get some understanding about what the administration policy was going to be on offshore leasing.

Mr. Lindgren testified before Senator Tunney on September 28 and said the decision whether to lease and what areas, if any, to lease has not been made, cannot and will not be made, until next summer at the earliest.

Then Mr. Sawhill indicated to me that off New England—there was not going to be any leasing pending further studies.

And then Mr. Carter said, that Mr. Lindgren's statement is not inconsistent with their position because he says this is really just a planning process and an allocating of the Department's resources in this area.

Here is what Mr. Sawhill indicated to us about Georges Bank.

> The Council study to which I referred in my statement does indicate the Georges Bank to be a promising area. Of course, FEA will not recommend such development until a more conclusive analysis shows the area to be suitable for oil and gas production without adverse environmental consequences.

Now I think most of the people up in Rhode Island and Massachusetts assume Mr. Sawhill is the principal spokesman on energy issues. A number of different groups in Massachusetts that have appeared before hearings of the Ocean Policy Study to present their views felt that their contributions were going to have some kind of impact in terms of administration policy about what was going to be done off our shores.

And now, you know, we have the memorandum from the Interior Department that it plans to lease 10 million acres in 1975. And as I understand this memo, and I will make it a part of the record, it says "prior to the meeting of OCS Research Management Advisory Board, October 3 and 4, the Under Secretary wants a firm leasing schedule laid out." The memo goes on to say "10 million acres leased in 1975, not just 10 million acres offered."

[The document referred to above follows:]

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C. September 18, 1974.

MEMORANDUM

To: Director, Bureau of Land Management.
Through: Assistant Secretary—Land and Water Resources.
To: Director, Geological Survey.
Through: Assistant Secretary—Energy and Minerals.
From: Jared G. Carter, Deputy Under Secretary.
Subject: OCS Leasing Schedule.

Prior to the meeting of the OCS Research Management Advisory Board on October 3 and 4, the Under Secretary wants a firm leasing schedule laid out that definitely includes the following items:

1. 10 million acres leased in 1975—not just 10 million acres offered.
2. A sale in '75 in both Alaska and the Atlantic.
3. An alternative, if number 2 fails, which will still allow leasing of 10 million acres.

On the same time schedule, the Under Secretary wants a plan for a lease sale on the Atlantic in 1975 that would include some leases in all of the promising areas of the Atlantic, rather than just the sale limited to Baltimore Canyon.

It is the responsibility of BLM to complete this response to the Under Secretary by no later than C.O.B. September 30th.

cc: Under Secretary Whitaker, Darius Gaskins, Fred Ferguson, and Frank Clarke.

Senator KENNEDY. Now that is your memorandum. It doesn't talk about doing a study of how a leasing program could be formulated. It says 10 million acres offered. Now the Deputy Solicitor from Interior told a Senate committee 10 days ago that the decision whether to lease and in what areas had not been made and cannot and will not be made until next summer.

Now you might not find this to be inconsistent. But I do not know anyone who uses the English language or any Member of Congress who uses the English language who would not feel that Mr. Lintgren completely misled a congressional committee.

Perhaps you want to run through it and tell me why you do not think so. It says 10 million acres leased in 1975, not 10 million acres offered. That is in that memorandum itself.

Mr. CARTER. I would be happy for the opportunity to explain that.

Senator KENNEDY. I wish you would.

Mr. CARTER. Now you referred to this as a release, and, while that is often the fact, it was not the intention. I doubt that any——

Senator KENNEDY. What is the significance of that point? You didn't want us to know that you made a decision although it did get out to the public?

Mr. CARTER. It is just that none of the addressees had any difficulty understanding exactly what it was.

Senator KENNEDY. What is the objection to Members of Congress knowing that you are planning not just to offer for lease, but actually to lease 10 million offshore acres? What is your objection to Members of Congress who represent those States——

Mr. CARTER. I have no objection whatsoever. And I am very happy to explain it. The issue within the Department, and indeed with everybody that is concerned about OCS leasing, is whether or not in fact we are going to be able to lease 10 million acres in 1975. That is a very substantial question.

And one of the ways you find out the answer to that question is to prepare a schedule as to how you would do it, and to make the necessary environmental and resource and budgetary studies.

Senator PASTORE. May I interrupt you at this point? Is this possibility of leasing predicated upon economics or is it predicated upon the spill and the pollution and the environment? I mean, are we concerned here——

Mr. CARTER. Primarily, it is an economic study, the——

Senator PASTORE [continuing]. As to whether or not anybody might be interested in leasing these offshore acreages, for the purpose of whether or not it is economically feasible and profitable, or are we concerned here with the beaches and the environment and the pollution that can result?

Now, as I understand it, and I am just now relying on my own recollection, the ocean study by the task force showed that there was a possibility of 5 percent spill reaching the shores of Cape Cod and when it would get down to Connecticut it would be 15 percent.

Now, we in Rhode Island are inbetween, therefore we would be hit at about 10 percent. Do you realize what this would do to us? This would ruin the State. The only natural resource that we have in Rhode Island is our beaches. And one of the primary economic benefits that we derive from that resource is tourism. You take that away from us and you are going to kill off the yacht races, you are going to spoil it for the people going down to the beaches.

Now, the question I am asking is this. How far are we going to go in determining that this is safe before we begin to lease? Now is that not a simple question?

Mr. CARTER. Senator, there will not be any leases unless a determination is made that it can be safely done. The history of OCS leasing is that, after about 20 years of experience, you have an outstanding safety record. There have been something like 11 spills in over 20 years that released more than 10,000 barrels of oil into the ocean.

Now you compare that with the safety record of importing oil into Rhode Island or any other State in tankers and you find that the oil pollution rate for imported oil through tankers is infinitely greater than is is through OCS development. The people in the Northeast are either going to import their oil in tankers or it is going to be produced from the OCS. Now that may not be the case with——

Senator KENNEDY. What assurance can you give us of that? What assurance can you give that we will benefit at all? What kind of assurances have you received from the oil companies that we in New England will receive even part of this new energy supply; that it is not going to be shipped right down to New Jersey.

You cannot give us any kind of an assurance like that.

Mr. CARTER. No. It is a question of economics.

Senator KENNEDY. And you distort, Mr. Secretary, when you suggest that with this development off New England we are going to be beneficiaries. I am sure that that is not the impression you were trying to——

Mr. CARTER. It does not make economic sense to develop it there and send it to some other market.

Senator KENNEDY. For refining?

Mr. CARTER. For any processing that is going to go into it. It is possible, technically, to pick it up out of the fields offshore and take it somewhere else for processing and refining, but it does not make a lot of economic sense.

Senator KENNEDY. How many refineries are we going to have in New England?

Mr. CARTER. I do not know the answer to that. Whether the refineries are going to stay where they are now to serve the east coast markets or whether they are going to move around is obviously going to depend upon the supply-demand picture.

Senator KENNEDY. We do not have any refineries now, and I think that New Englanders would like to know, if you are planning to do some oil development, what communities are going to have these refineries.

As a matter of fact, a number of communities have already voted on this question, and indicated that they do not choose to have those refineries.

Mr. CARTER. You have refineries in the mid-Atlantic area and certainly New England is now served by refineries up in the Canadian area and then I believe you get some product from the Caribbean.

The importation of those products by tankers or from pipelines from the mid-Atlantic also involves environmental problems for the east coast area.

Senator PASTORE. If I may pursue my thought, you see we are not going to badger you—I suppose you are imbued with the public interest and you try to do your job the best way you can and you are just as sincere and conscientious as we are. I mean that is not the question between us just now. But you have raised the question that the peril or the risk is about the same that it would be with the tankers coming in.

The fact remains that we have had tankers coming into Rhode Island ports for a long time and we have not had many problems but we do know that out in Santa Barbara they have had a serious problem and the people are in an uproar.

Now it is a frame of mind in this whole matter that concerns us. Naturally we have got to probe for more oil and maybe the only place we can go is offshore. We all recognize that. But it strikes me that the people who have to make the sacrifice, if this is going to be a sacrifice at all, have to be assured that there is no risk involved.

I do not know if you are familiar with this. We have written a letter to the President. Are you familiar with this letter?

Mr. CARTER. No, sir. I am not.

Senator PASTORE. Now there we are. We are sending this letter down to the President. It has been signed by practically every Senator from that part of the country along the Atlantic seaboard and it says here, Mr. President—do you mind if I read this Senator Kennedy?

Senator KENNEDY. Not at all.

Senator PASTORE [reading]:

> Dear Mr. President, we wish to express our surprise and dismay on learning that the Department of Interior is proceeding toward the 1975 leasing of ten million acres for offshore oil and gas development including acreage in the Atlantic and the Gulf of Alaska at a time when environmental baseline studies in state coastal zone management efforts are at a very early stage.
>
> We recognize and support the need to expedite development of the nation's domestic energy resources, including outer continental shelf oil and gas, but we

have not been informed of any factual basis for Interior's judgment that ten million acres in 1975 is the magic number needed by the nation. Moreover, we do not believe that it is wise to lease in hitherto undeveloped areas before environmental and coastal planning needs are met.

We are particularly concerned that the Interior leasing program is moving ahead with apparent disregard for the interagency effort to gather environmental baseline data on the proposed new areas and similar disregard for state efforts to develop coastal zone management programs in accordance with the Coastal Zone Management Act of 1972.

We have serious doubts about the oil and gas industry's financial and technical capability to develop such a large number of acres in a single year, and about the rational basis for selecting this level of leasing as appropriate or necessary for the nation's energy needs. We understand that the Department of Interior is in the early preparatory stages of an environmental impact statement on the ten million acre program as required by the National Environmental Policy Act of 1969. Hopefully, the Interior Department will set forth the rationale behind the program. It seems most untimely, therefore, for leased sales to be planned before the completion of environmental impact studies or the determination of whether ten million acres is a realistic or reasonable level for 1975 leasing.

It is quite a long letter. I am not going to read it all. I am going to make it available to you.

[The document referred to follows:]

U.S. SENATE,
Washington, D.C., October 7, 1974.

The PRESIDENT,
The White House
Washington, D.C.

DEAR MR. PRESIDENT: We wish to express our surprise and dismay on learning that the Department of Interior is proceeding toward the 1975 leasing of 10 million acres for offshore oil and gas development—including acreage in the Atlantic, the Pacific and the Gulf of Alaska—at a time when environmental baseline studies and state coastal zone management efforts are at a very early stage.

We recognize and support the need to expedite development of the nation's domestic energy resources, including outer continental shelf oil and gas, but we have not been informed of any factual basis for Interior's judgment that 10 million acres in 1975 is the magic number needed by the nation. Moreover, we do not believe it wise to lease in hitherto undeveloped areas before environmental and coastal planning needs are met.

We are particularly concerned that the Interior leasing program is moving ahead with apparent disregard for the inter-agency effort to gather environmental baseline data on the proposed new areas, and similar disregard for state efforts to develop coastal zone management programs in accordance with the Coastal Zone Management Act of 1972.

We have serious doubts about the oil and gas industries' financial and technical capability to develop such a large number of acres in a single year, and about the rational basis for selecting this level of leasing as appropriate or necessary for the nation's energy needs. We understand that the Department of Interior is in the early preparatory stages of an environmental impact statement on the 10-million acre program, as required by the National Environmental Policy Act of 1969. Hopefully, the Interior Department EIS will set forth the rationale behind the program. It seems most untimely, therefore, for lease sales to be planned before the completion of environmental impact studies or the determination of whether 10 million acres is a realistic or reasonable level for 1975 leasing.

The Senate recently passed S. 3221, the Energy Supply Act of 1974, which provides for several notable improvements in OCS leasing policies and practices. However, the House of Representatives has not yet acted on OCS legislation, and the deliberations of both Houses are expected to continue into the next Congress. We believe that OCS leasing in new areas should await the outcome of that legislative process.

The National Ocean Policy Study of the Senate is currently analyzing OCS issues. Preliminary analysis by the Study supports our belief that offshore leasing programs should proceed only as rapidly as the state and federal programs for coastal planning and environmental data gathering can proceed.

You will recall that the Council on Environmental Quality, in reporting to former President Nixon on its environmental assessment of OCS oil and gas in the Atlantic and the Gulf of Alaska, stated several principles which should guide

federal leasing programs. These principles included: a policy of "very high priority on environmental protection" in regard to OCS exploration and development; a leasing program in which the location and phases of lease sales are "designed to achieve the energy supply objectives . . . at a minimum environmental risk"; use of the "best commercially available technology . . . to minimize environmental risk"; federal regulations for environmental protection that are "fully implemented and requirements strictly enforced"; federal consultation with state and local authorities to provide affected areas with "complete information as early as possible so that planning can precede and channel the inevitable development pressures"; and a "major advisory role" for the interested public on OCS management and regulation.

We suggest, Mr. President, that unless given higher federal priority, environmental and coastal planning measures cannot possibly be fully implemented in time for 1975 leasing in all new areas of the Atlantic and the Gulf of Alaska, and premature leasing in these new areas cannot possibly adhere to the principle of expanding energy supplies with minimum environmental risk.

We urge you to revise the federal leasing program to ensure the concurrent progress of environmental baseline studies, impact assessment, and federal assistance to state coastal zone management programs. The 1975 program should, in our view, also await a factual justification for leasing 10 million acres, some in new areas, including a determination that the oil and gas industries can cope with this high level of development.

When leasing does take place in new areas, we believe the areas chosen should reflect the results of environmental studies, and should begin with those areas found to hold the lowest level of risk to the marine and coastal environments. If we are to avoid undue delay in developing the outer continental shelf, we must step up federal funding of environmental baseline studies and federal assistance to coastal states as they develop their coastal zone management programs. This way, the OCS leasing program will clearly conform to the findings of the CEQ study, the views of the coastal states many of us represent, and the spirit of the Coastal Zone Management Act of 1972, which requires federal programs affecting the coastal zones to be consistent with state coastal zone management programs.

We were most heartened by your inaugural address to the Congress, in which you expressed your desire to build a good marriage with Congress and work together to solve the critical problems before us. We applaud your sincerity and we certainly share your goal. For this reason, we urge you to make it possible for us to work together toward a rational policy for development of the outer continental shelf. The Interior Department's unilateral decision to go ahead with a hasty and ill-conceived 1975 leasing schedule at this time represents a serious impediment to our cooperative efforts. We hope you will heed and share our views on this vital matter.

Sincerely yours,

ERNEST F. HOLLINGS
EDWARD M. KENNEDY
EDWARD W. BROOKE
ALAN CRANSTON
MARK O. HATFIELD
CHARLES MCC. MATHIAS, JR.
CLAIBORNE PELL
JOHN V. TUNNEY
JOSEPH R. BIDEN, JR.
THOMAS J. MCINTYRE
CLIFFORD P. CASE
HARRISON A. WILLIAMS, JR.
LAWTON CHILES
WILLIAM D. HATHAWAY
EDMUND S. MUSKIE
JACOB K. JAVITS
JOHN O. PASTORE
BOB PACKWOOD
HUBERT H. HUMPHREY

Senator PASTORE. A whole section of Senate membership of the Congress is interested in this matter, addressing ourselves to the President and telling you to take it easy before we get an environ-

mental study that will give us the assurance that we are not taking a chance on the pollution of our shores.

Here is a copy of the letter. I am going to give it to you.

Mr. CARTER. Thank you very much. Let me respond to a couple of the points you made if I may.

One of them is, there is no way that the Nation can have its energy requirements met without some risk, both environmental and economic.

Second, it is clear from the experience we have to date that the environmental risks involved in OCS development is less than the environmental risk involved in the alternative of importing oil in tankers.

Third, and equally important, is we are importing about 6.4 million barrels of oil a day, right now, at an annual cost of about $23 billion to this economy.

Now, even if you do not have some political, foreign relations problems, by being that dependent upon foreign sources of oil you certainly have very substantial economic consequences for the economy by spending that much of our resources for foreign supplies. So if the country is going to increase its domestic resource base, it has got to look to the areas where that potential exists.

And oil and gas is about the best area to turn in the short run for decreasing our dependence on foreign sources.

Senator PASTORE. And no one in God's world can disregard or disagree with what you have just said. The only question that we raise is this. Because of the incidents we have had in Santa Barbara and other parts of the country, do you not think that we owe it to the people of the country to make sure that we develop a technology of offshore drilling which will give us better protection than we have experienced up to this time? I mean, must we give up our shores, must we give up our beaches, must we give up our environment, before we perfect in every way possible the kind of technology that is necessary for us to drill offshore and do it safely?

Mr. CARTER. Senator, I would like to provide for you a list of the changes that have been made since the Santa Barbara spill in 1969. In my mind I have no question but what OCS development is safer than the alternative of importing oil in tankers.

Senator KENNEDY. What do you base that on?

Mr. CARTER. Worldwide, approximately 2 to 4 percent of the oil that goes in the ocean comes from OCS development, about somewhere in the neighborhood of 38 percent comes from oil tankers. If you take shipping as a whole, you get the level up to a little over 50 percent. About 38 percent of the oil that enters the ocean comes from crankcase oil that people pour into their service station drain and it finds its way into streams and then later into the estuaries and the bays where the rivers empty.

The OCS production has been an extremely small percentage of the contribution of oil. The safety record in the last several years has been outstanding. And I would point out just this weekend I read in the paper where a ship in the New England area had spilled several barrels, I forget what the amount was, into the New Haven Harbor. A tanker incident. We had a tanker incident in New York a year or so

ago. We have more tanker incidents spilling oil on U.S. beaches and shores than we have from OCS development.

Senator KENNEDY. The fact remains you are planning to lease more acreage next year, in 1 year, than the total leasing that has been done up to this time. You are not just taking one more small step based on the past. You plan to do more in the next 12 to 15 months than you have done in the history of offshore leasing, yet we have not seen any studies or facts that give any kind of indication as to what the impact is going to be up in New England.

Conditions are entirely different off the New England coast in the wintertime than in the Gulf of Mexico. There is a high risk to oil rigs in the wintertime in the North Atlantic.

And I would like to know what the basis is for these environmental studies that you talk about with such a degree of certainty. Certainly the ones that have been conducted to date indicate that a good deal more work has to be done.

Mr. CARTER. Senator, I quite agree with that. And the reason to get the schedule is so you will know what areas to zero in on and study.

Senator KENNEDY. If you are just doing the study now, how can you put dollar figures on the value of these areas?

Mr. CARTER. You mean from a budgetary point of view how can we budget for it?

Senator KENNEDY. No, not what you budget inside, but how you estimate what this land is worth, what the leases should bring in revenue.

Mr. CARTER. As soon as an area is scheduled, as soon as we establish a leasing schedule, and this is the 5-year schedule from 1973, it becomes a planning document and we start allocating effort to make just those kinds of studies, both what the environmental consequences are likely to be, and whether specific regulations are necessary to avoid problems of a specific kind in a certain area. We also begin to look at the resource data in detail in that area to find out, one, whether we were right, that it is a place that should be leased, that is whether there is oil and gas there; and then, too, we look at every individual lease tract in detail to try to get a figure of what we would accept as a bid.

We make that detailed of a resource analysis. Now you cannot do those kinds of studies without a schedule. Putting an area on a schedule does not mean you have made a decision to lease that area. It means you have made a decision to study that area in detail to find out whether you should lease it. And that is what we are trying to do for 1975 because if we do not do that now, we are going to continue importing oil at 6.4 million barrels a day for that much longer.

Senator PASTORE. Do you not have a double question here? No. 1; whether or not the area should be leased at all should depend entirely upon what the risk might be, as well as what the production possibility or feasibility is; and No. 2, once you have leased, is that not the go-ahead on the part of the bidder to begin drilling? I mean, that is not clear in my mind exactly what you propose to do in 1975. The way you have explained it, it is still rather nebulous.

In other words, what we want to know is before any lease is given out at all, irrespective of whether or not it is productive, what the

risk is going to be. I think that ought to be the first step which should be called to the attention of Congress, before you get into the next step of allowing bids to come in, which is a license to go ahead and start drilling, regardless of what the consequences are.

Mr. CARTER. I agree with you, Senator, and we will do that.

Senator PASTORE. All right.

If you agree with me, please explain to me exactly what is in the program for 1975. Is this going to be two steps with an interlude to allow Congress to pass upon the first step before you get into the second step?

Mr. CARTER. Senator, it is about a three- or four-step procedure.

Senator STEVENS. Would you yield there?

Senator KENNEDY. Can he just finish the answer, because I want to hear that.

Senator STEVENS. Well, I think the question overlooks a very significant fact, and that is, you must propose an action before the whole environmental process starts. The NEPA Act, the National Environmental Protection Act, requires the proposed Federal action that would have substantial impact to the environment before all these things start.

Senator PASTORE. I know, but it does not have to be conclusive. That is the reason why I am asking the question. After all, Congress is interested in this, and we are a partner in this, and we do not want somebody to get the idea that all we are interested in is the oil, and be damned with the beaches or be damned with the environment.

Mr. CARTER. Neither do we, Senator. We quite share that objective.

Senator PASTORE. That is right, and that is the reason why I say, we ought to be brought into this picture; one, to make a determination as to whether an area is leasable, and then we ought to discuss at that time just what the consequences might be as to the pollution problem, and also as to productivity.

Mr. CARTER. Right. What we do is, once an area is on the schedule, we announce that schedule. You see, no decision is made right now as to whether there is an east coast area on our leasing schedule in 1975, much less whether it is the Georges Bank area, the mid-Atlantic, or the Georgia Embayment area. Once a decision is made that we would like to lease in a particular area, we announce that, and we begin the preparation of a detailed environmental impact statement. We have begun to go out to the State and local government officials and ask them to participate in that study, give us their input, even before you get to the public hearing phase of an impact statement. But then, after a draft is published, looking at all of the individual tracts in the entire area, we publish that and we hold hearings in which any official, or any member of the public, is invited to come testify. Then, we prepare a final environmental impact statement. We take that impact statement, all of the resource studies that we have have available, and we decide: one, whether we can go forward with the lease sale in the area; two, if we can, what specific kind of environmental controls should we apply in that area that are different from other areas; and three, we get an assessment of what kind of price we expect for those leases, so that we are not giving away the public domain.

And then, if the decision is affirmative, we hold a lease sale. We accept some bids, and we reject some bids on the basis of being too low. Then, each lessee, before he can drill his lease, has to submit a development plan. He has to get a permit to drill his lease. At that time, if we want to put any additional controls on the conduct of his drilling, we can and do. Once he has discovered oil he has to apply for a development plan. Where is he going to bring it ashore? Where is his pipeline going to run? What kind of platform is he going to put in, or is he going to collect it offshore somehow, and carry it by tanker to some other location?

At every phase, we operate in the open, with public awareness of how the decision is made, and with an opportunity to come back and tighten up regulations, if we find that they are not working well. So I think that the procedures we have adequately provide for the kind of study that you very well want, and we quite agree they are necessary; and we intend to do that in spades in the new frontier areas, because we are quite aware that the public is not as familiar with OCS leasing as they are in the Gulf of Mexico, where you have got 20 years of fairly successful experieyce.

Senator PASTORE. And in this process, will the Governors of the contiguous States be consulted?

Mr. CARTER. They will certainly be consulted in the preparation of an environmental impact statement. The Governors of most States are consulted on a fairly regular basis about whether or not it is a good idea to lease in an area off their shore; and they are given an opportunity to participate early in that decision. The Governors may not always agree with a Federal decision, because, as again you have pointed out, in a particular area, there may be a great deal of opposition to a course of action. There may not be a great deal of support for a course of action that is designed to solve what is essentially a national problem of energy supply/demand. So I would not want to get in a procedure where you in effect give a veto to any particular area.

Senator PASTORE. I am not suggesting that. I am just talking about the environmental impact study.

Mr. CARTER. Oh; yes, sir.

Senator KENNEDY. Well, if the Senator would yield, that is an interesting process that you have outlined. But that is contrary to the way that I read the Department of Interior memorandum, which says, 10 million acres leased in 1975; and in the same memo, the Under Secretary wants a plan for lease sale on the Atlantic in 1975 that would include some leases in all the promising areas of the Atlantic, rather than just a sale limited to Baltimore Canyon.

Now, that means Georges Bank to me.

Mr. CARTER. Let me explain that, if I may.

Senator KENNEDY. Well, wait a minute, now. I am hopeful that in your explanation you can tell us how you can say that open procedures will be followed; that everyone is going to have their voice heard; that the decisions are still open. That is not what this memorandum says. It says that 10 million acres will be leased, and that the areas that are going to be leased are going to be in the Atlantic. Under the definition of your people down in Interior, when they talk about Atlantic, they are talking about Georges Bank. But you are

talking about the area of the southeast Georgia Embayment and the Baltimore Canyon. And if that brief, one-page memo does not say to me that your people have made up their minds and that you are going to go ahead and offer leases in the North Atlantic, then I do not understand the English language.

Mr. CARTER. Senator, I did not write that memo to you. I wrote it to a bunch of people that——

Senator KENNEDY. Well, you have three or four different people speaking here. You have got Senator——

Mr. CARTER. Let me tell you what the memo means. The issue in the Department, as the issue with a number of people, is whether or not you can lease 10 million acres in 1975. A lot of competent, honest folks say you cannot get from here to there. They say let us only offer 10 million acres in 1975, let us not try to lease that much. If you offered 10 million, you will lease somewhere around 4 to 5 million.

What paragraph 1 says is, we want a schedule that provides for leasing. That does not mean we are going to lease it. That means we are going to put that much on our schedule, and try to get from here to there.

Senator PASTORE. Will you admit that what you are saying now is quite different from what is on this memorandum?

Mr. CARTER. No. I think that this memorandum——

Senator PASTORE. Why do you have to explain it?

Mr. CARTER. Because it was not necessary to explain it to the people it was addressed to, Senator. What is in the context is the way we have prepared leasing schedules with about 5 years of experience. There is no one in our department that misunderstood what preparing a leasing schedule amounts to.

Senator PASTORE. But there is nobody in your department that is directly responsible to the people, as we are, and I can understand that. I can understand that very easily. We are the ones that get the flak. You do not get it.

Now, look what it says here. Prior to the meeting of the OCS Research-Management Advisory Board on October 5 and 3 and 4, "the Under Secretary wants a firm leasing schedule laid out that definitely includes the following items * * *". Now, No. 1, "10 million acres leased in 1975," line, "not just 10 million acres offered."

Mr. CARTER. That is exactly what I just said; and the reason we wanted this was to give it to the Governors' representatives at that meeting, so they would know our thinking, so they would have an opportunity to participate with us in deciding what kind of environmental and technical studies were necessary to know whether you should, in fact, go ahead and conduct lease sales. And I thought, and still think, that our responsibility is to schedule those areas far enough in advance to give the Governors' representatives and the public an opportunity to know our thinking, and to have input in those areas with us. That was the purpose of this memorandum.

Senator PASTORE. Are you assuring us this morning categorically—categorically, without any ifs, ands, or buts—that you will not have a leasee tied up on any lease until you have a complete impact study that justifies the usage of that particular area?

Do you understand my question?

Mr. CARTER. I do not know what "justifies the use of that area means," but with that caveat, the answer is yes.

Senator STEVENS. That is the law.

Mr. CARTER. That is why I agreed, Senator.

Senator STEVENS. You cannot make any step without an environmental impact statement, and you cannot make the decision to release until you have an impact statement. I find it very difficult to understand the hearing on this, is fact, because somebody has got to propose something before you even get the environmental impact statement route started.

Senator PASTORE. The only trouble is that you do not happen to live in Rhode Island. You are up in Alaska.

Senator STEVENS. Six million of those acres are off of Alaska's coast, and we do not want them leased, and I do not think they will be leased until you get the environmental data which will be collected.

Senator PASTORE. That is what we are trying to develop here, my friend.

Senator KENNEDY. Where are you going to get the environmental data? I mean, it is very easy to say that you are going to get it and do a comprehensive report. The National Academy of Sciences discussed our particular problems up in the Northeast as follows:

> From the CEQ study, which was based on existing data, and on the basis of its own understanding, the Committee agrees with CEQ that present knowledge is inadequate for assessing thoroughly the physical biological consequences of OCS development activities on the environmental question.

Now, in response to Senator Pastore's question, what additional information are you going to get? What additional study are you going to make in order to do the study that you talk about? Or are you just going to depend upon existing information?

Mr. CARTER. Senator, I will not endorse a course of action that requires you to satisfy every scientific, possible question about an area before you make a lease decision. The law does not require that. It would be contrary to commonsense to do it.

Senator KENNEDY. Have you heard anybody suggest that? What we are talking about is the conclusion that the Academy reaches that, on the basis of existing data, the committee agrees that present knowledge is inadequate for assessing the situation thoroughly? Do you not want a thorough study?

Mr. CARTER. I do not know what the Academy means by "assessing throughly"; and what I am saying is, I do not propose to give to the Academy the decision about whether or not sufficient evidence exists to make a decision, yes or no, on leasing. I think that it is very vital for the Nation's interests to get some oil and gas produced, and if you wait until you have answered every conceivable question in an area, you put off decisionmaking too long. What I will say is, I am very, very proud of the way we are approaching the preparation of environmental impact statements in the OCS; the way we are engaging the scientific community, the Governors' offices, and the public in having input into the environmental impact statement process. And we are going to produce all of the information that is available. We are going to point out what the problem areas are, and subject the matter to a public hearing. Only then can you make a decision, as the law recognizes in NEPA, whether you are in a position to lease or you are not.

Senator KENNEDY. The point is that the track record of the Interior Department on this has been abysmal.

Mr. CARTER. I do not think that is true, Senator.

Senator KENNEDY. It has, it has been. Over 2 years ago the Department talked about offering some leases without any study at all.

Mr. CARTER. When was that? I do not believe——

Senator KENNEDY. Secretary Morton appeared before the New England congressional delegation over in the House Cannon Building 2 years ago, and indicated at that time that they were going to move ahead with a leasing program. And then, because of objections of a number of us who called for an independent environmental study, he finally said that although he could not agree completely, he thought there was some merit to such a study. Finally we were able to get a reluctant endorsement from the administration for a study done by the CEQ. They finally agreed that sufficient environmental data had not been considered. The Academy of Science reviewed all of the CEQ's material, and they came up with the same kind of conclusions on it. Interior has opposed any kind of increased funding to support NOAA's research vessels, which could have been extremely helpful in conducting work which most marine biologists felt was absolutely essential in order to get more data. You have opposed that down the line.

We can give you chapter and verse on that. You say that you are going to do an impact study. When you hear the various groups that have reviewed the material say that sufficient information has not been collected to date, you respond that you are not prepared to answer every challenge or every accusation. The conclusions of these studies are not based upon just individual views of scientists or environmental freaks. They are based on scientific information, and I would say, on the best that has yet been developed. And I want to know from you what information you have that they do not have.

Mr. CARTER. Well, first of all, Senator, I did not read this CEQ report as saying that we did not have enough information to make a judgment about leasing on the Atlantic coast. The National Academy of Science said that, in order to make a thorough assessment of all of the impacts, you needed some more information. The CEQ report itself, though I do not believe it, concludes that you have to do a lot of scientific studies before making a leasing decision. They list as relatively safe the Georges Bank area and the mid-Atlantic area for OCS leasing.

On the other points, please understand the difference between establishing a leasing program and making a decision to hold a lease sale. Establishing a leasing program is saying that we would like to hold some lease sales in this area for very valid national reasons.

Senator KENNEDY. Do you think there will be a lease sale—say, in the gulf, southern California, Alaska, and the Atlantic?

Mr. CARTER. In 1975?

Senator KENNEDY. Yes.

Mr. CARTER. I certainly hope so, Senator.

Senator KENNEDY. Do you think there will be? What do you think is the general feeling now, down in the Interior Department? The people we have all talked to say that it is as certain as the nose on your face.

Mr. CARTER. That there will be?

Senator KENNEDY. Yes; that there will be sales in the gulf; they estimate two sales in the gulf, one in southern California, one in

Alaska, and one in the Atlantic, and I want to get this in the record.

Mr. CARTER. I would like the guy, so I can put him in charge of the program. It is going to be tough to get from here to there, and if we could find some guy that is confident, we can do it. That is the kind of person you want running the program, because it is going to be tough. There is opposition to it, as you well know, in all of those areas, and it is not possible just to simply ignore that opposition and willy-nilly make a Federal decision. But it can be done safely, and we are proceeding in a rational manner to get from here to there, and the Nation needs the oil and gas. If we do not get it, I would like to know what alternatives we are going to come up with to supply that gap.

Senator STEVENS. I can give you an alternative, if you like. Get about 100 million acres of Alaska—it has not been put up for leasing yet—that some people want to have withdrawn for all forms of national interest areas before it has even been assessed for its oil and gas potential. But maybe hearings like this might get you toward that conclusion.

I would like to ask this. As a lawyer, if you made the decision that my colleagues would like to have you make right now as to whether or not you are going to have a sale, would you not be violating the spirit of NEPA?

Mr. CARTER. Yes, sir.

Senator STEVENS. You cannot make that decision until you make the environmental impact statement, can you?

Mr. CARTER. No, sir.

Senator STEVENS. As to the leasing. But as to the program for leasing, that is essential to start the impact?

Mr. CARTER. Yes, sir; and it is our obligation under the Outer Continental Shelf Lands Act to make just those kind of decisions.

Senator STEVENS. I question seriously that the problem that some people have—and respectfully, my good friend from Massachusetts—about a cold-weather country and the offshore drilling and platforms. I would invite anyone to come up this winter and see the platforms in the Cook Inlet, and how they withstand the pack ice. We have not had a substantial incident in the Cook Inlet since we started drilling, and we are prepared to go into lower Cook Inlet as soon as you will let us.

Senator KENNEDY. When was the last time you had a hurricane up there?

Senator STEVENS. Well, we had an earthquake.

Senator KENNEDY. When was the last hurricane you had up there?

Senator STEVENS. No hurricanes, but we had earthquakes and tidal waves. But beyond that, the pack ice annually is worse than a hurricane. The pack ice drives in there.

Senator KENNEDY. Have they got some environmental studies that show that?

Senator STEVENS. Certainly. The CEQ study says that the highest risk is in the Gulf of Alaska.

Senator KENNEDY. Well, if you want it, you can have it up there. If you want that up there, that is all right with us, if that is the decision. But what we would like to try and find out about are the

inconsistent statements by the administration, the conflicting statements. Why does Mr. Sawhill, who is the energy czar, say last week that there will not be lease sales, and then we find the Interior saying that there will be?

Senator STEVENS. Well, I was there last week. He said there was not going to be a decision made as to leasing until next year. But there is a program to bring about leasing this year. I do not find that inconsistent; and as far as the Gulf of Alaska, my friends from the Interior know that I am the first one to tell them they should not lease the Gulf of Alaska until we get the data we need.

Senator KENNEDY. Why does the Director of the Federal Energy Administration say: "Of course FEA will not recommend such development until more conclusive analyses show the area to be suitable, and without adverse environmental effects." Now, why does Mr. Sawhill say yes, this is the case, while Interior reaches a different conclusion, that they are ready to go right out and lease in the Baltimore Canyon area, and that they are looking around for a good guy that is going to be able to get that job done?

Senator STEVENS. I do not find that inconsistent. One is a program and the other is a decision.

Senator KENNEDY. I see.

Senator STEVENS. The decision has not been made yet.

Senator KENNEDY. They are confused up in our part of the country, Senator. Maybe you do not see those inconsistencies. I would think they would be confused in California as well with Mr. Lindgren's statement.

You said, as I understand, in April of this year, Mr. Carter, that without more specific information about the oil and gas that could be produced, and without information about the special environmental and socioeconomic effects of development in particular areas, it is not possible to offer leases in frontier areas.

Mr. CARTER. That is correct.

Senator KENNEDY. Has anything changed? Do you still feel that way now?

Mr. CARTER. Yes, sir. All that statement was was that the CEQ report itself was not a basis on which one could adequately rank the desirability of leasing programs in the frontier areas, because it dealt only with environmental questions; and what I was saying is that you have to counterbalance the resource potential of an area with the environmental costs before you can make an intelligent decision. And that is true as a general proposition, whether it is frontier area or an area where you have leased in the past.

Senator KENNEDY. How many acres are actually going to be offered for lease?

Mr. CARTER. I do not know, Senator. We have not got a schedule prepared. That is why we were pushing to get one established inside the Department, so we could begin the necessary studies to get to some leasing decisions.

Senator KENNEDY. What is the best judgment on it? What can we expect?

Mr. CARTER. My guess is that to try to lease 10 million acres, you are going to have to offer somewhere in the neighborhood of, say, 16 million—maybe even a little more. It is going to depend on the

resource analysis of a particular area, and a number of other factors.

Senator KENNEDY. Maybe we could hear from Mr. Ligon about what Mr. Sawhill's letter was all about.

STATEMENT OF DUKE R. LIGON, ASSISTANT ADMINISTRATOR, FEDERAL ENERGY ADMINISTRATION

Mr. LIGON. I would be glad to do that, Senator.

It is a pleasure to be here with you this morning. I have a prepared statement, actually.

Senator KENNEDY. We will put it in the record. You have caught the thrust of our interest here; why don't you direct your attention to those particular points which you have heard raised here.

Mr. LIGON. I would be glad to. There is no question, Senator, as reflected by the comments this morning, that the Interior Department has the ultimate responsibility and authority with regard to development of the resources in the Outer Continental Shelf. Our interest in the Federal Energy Administration is in the full development of domestic resources in a balanced, responsible way. If we are unable to do that, unable to accomplish OCS development in this manner, we will go to other alternatives; but at least it is our responsibility to examine each individually, and carefully. I know that one of the things that you are interested in here today has to do with the timing and size of the offshore lease sales, as well as the kind of procedure that will make the decisionmaking process meaningful to you. Experts who have analyzed the reasons for our failure to develop domestic oil and gas resources in sufficient quantities in the past have suggested that our failure to lease enough acreage in a well planned and timely manner has been responsible for some of the decline in domestic production in this country.

If we are to learn from the past, it would seem important that at least a tentative lease sale schedule be published and, where suitable, adhered to, so that the oil and gas industry will be able to make approprite investment decisions that will be associated with that kind of development.

It is important to remember, however, that a lease sale schedule is always tentative in that the final decision regarding a proposed sale can only be made after all the relevant information is received and carefully considered.

Senator KENNEDY. Do you feel you have it now, or not?

Mr. LIGON. No, sir, we do not; and I think, as Mr. Carter tried to explain a moment ago, with regard to the procedure that must be followed under the law, we are certainly in the midst of making proper evaluations doing that at the present time, or at least the Interior Department is.

We are also, Senator, in the process of trying to determine through our Project Independence blueprint, as you indicated a moment ago and as you indicated in your letter to Administrator Sawhill, how what Mr. Sawhill said in Boston at the Project Independence hearings would relate to the development of this particular area. And we feel like it is very, very important that any kind of movement to develop the Outer Continental Shelf, must be carried out in a balanced, responsible way, and adherence to the requirements of the law will guarantee that.

If that is the case, and the law is adhered to—and I feel that the Interior Department certainly intends to do that, the States which will be in any way affected by offshore development, in New England, southern California, and the Gulf as well as the Gulf of Alaska and the Alaskan offshore areas, and other members of the public, will be given an opportunity to voice any objections or comments they might have.

What we need, Senator, is a balanced leasing program that will help the industry develop the Outer Continental Shelf, thus increasing the country's total available resources. I think that the law is very clear as to how it must be done. And as to where, when, and how much, we defer those decisions to the Interior Department's expertise.

Senator KENNEDY. Well, do you think that we ought to wait until the coastal zone plans have been completed?

Mr. LIGON. I think that remains to be seen. I think it is very important the public hearing process be utilized and that the coastal zone input be present if at all possible. It depends upon the time schedules in the various States, and as to what area we are talking about leasing.

Senator KENNEDY. Well, you said last week that you thought that coastal zone plans should be completed first.

Mr. LIGON. I said last week, Senator, that I thought that it would be very important to get the input from the coastal zone committee and so forth with regard to the California OCS area.

Senator KENNEDY. Why do it in California and not off New England?

Mr. LIGON. I am not saying that you should not, I am just saying that that is something that must be determined as Interior goes through the procedural steps that are outlined.

Senator KENNEDY. What is your recommendation on it? What is your feeling?

Mr. LIGON. My feeling is that the Interior Department must—and I am sure they will—go through the procedural steps outlined in the act. Those steps will safeguard the public's concerns that you have expressed here today. That is also very important to us at FEA; in fact, the FEA has actually turned down projects that we felt were not environmentally acceptable. It is very important that we maintain a balanced view while trying to develop the Nation's resources.

Senator KENNEDY. That was not the question. My question was not do you think the Interior Department ought to follow the law in terms of environmental impact. My question to you was should we wait? It is your feeling and the feeling in FEA on waiting until coastal zone plans have been submitted?

Mr. LIGON. As I indicated in southern California, Senator, I believe that as the Interior Department goes through the procedural steps outlined in the act, they will make the determination as to whether or not they have enough information to go ahead to the next step. The timing as far as the coastal zone studies are concerned is also very important. I think it is imperative that the public have an opportunity, through the coastal zone commissions, or through advisory groups, public hearings, Project Independence blueprints, or whatever—for input in this kind of decision.

Senator KENNEDY. Well, this will be the last time I will ask it—you have said that the Interior Department will make the decision. I understand that they will make the decision. I am looking for what

your position is, not whether they will make the decision or whether they will comply with it, but what your position is.

Mr. LIGON. As I indicated, Senator Kennedy, we would certainly defer to the Interior Department's expertise and authority in that kind of provision. It is very clear that they have the experience and the wherewithal to go through the procedural aspects. I do not think that the timing would necessarily conflict with the coastal zone recommendations, whatever they might be, assuming that the timing of the leases is not before the coastal zones' reports, in certain States other than southern California. Because the emphasis, of course, is on the protection of the people in the States that are concerned about the sociological impacts of onshore activity related to the offshore development.

Senator KENNEDY. It seems to me, and the record will stand that this is a different answer than you gave last week.

Mr. LIGON. Well, it is not intended to be a different answer at all, Senator Kennedy, nor is it intended to be inconsistent whatsoever, and I do not feel that it is.

Senator STEVENS. Would you yield on that?

Senator KENNEDY. Sure.

Senator STEVENS. I think this California problem should be placed in focus. California has the unique opportunity to segregate out a portion of its coastal zone plan and proceed at a pace where they could assist in this decisionmaking. It is my understanding from the hearing last week—and I was at the hearing in Los Angeles, when Mr. Ligon was there, that California's Coastal Zone Commission is unwilling to separate out the area of southern California coast, and accelerate the completion of that plan. The real question is, should Interior wait for the completion of that plan? If they agree to wait for the completion of that plan, then all a State needs to do to veto any offshore leasing is not complete the plan.

I think there was a reasonable alternative offered and that is to accelerate the completion of their coastal zone plan in the area of controversy. Mr. Ligon said last week that was negotiable. I think it is a negotiable thing and it is possible. Senator, as you know, I am also involved in a coastal zone plan, and would like to see the Interior Department work with the State of California to make those two compatible—the offshore leasing plan and their coastal zone plan. However, I do not see how you can do it unless they agree to accelerate their plan but they are not in that frame of mind yet. They are unwilling to take out that portion of southern California where there is real controversy because of a California political question.

Mr. Ligon, I believe I understood you to say last week, that as far as FEA is concerned, you thought that there should be consultation and the plans should be coordinated with offshore leasing. I think the Department of the Interior's problem is a different one, and that is the timing of that California plan. If California were to come up and say, if you will give us another 9 months we will complete this plan, that is a negotiation. I do not see that Interior ought to tell California that it is not going to proceed until the plan is cmpleted. Then you have given them a veto, because they never need to complete the plan.

Mr. LIGON. Senator Kennedy, I think that flexibility is very important. It is also very important that all parties involved have the opportunity for necessary input. It is very important with regard to the people that it may or may not affect and in what degree. It is very important that that leasing procedure be flexible.

Senator KENNEDY. Then, don't you think that we ought to even wait until the Project Independence report is completed?

Mr. LIGON. No, that is not what I said, Senator Kennedy.

Senator KENNEDY. No, I am asking you that.

Mr. LIGON. No, sir; that is not correct.

Senator KENNEDY. Do you think we should wait, then?

Mr. LIGON. No.

Senator KENNEDY. You do not think so?

Mr. LIGON. I am sorry; excuse me. I do think that the leasing schedule should proceed to the degree that Interior has projected, to the extent that it is already underway. Now, I certainly feel that the Project Independence blueprint reports and input from all over the country should be a part of that, and we will, hopefully, be given an opportunity to do that in the environmental impact statement. It certainly should be a part of any determination as to what is leased and when.

Senator KENNEDY. Well, how should it work then? Tell me how you are going to affect that process.

Mr. LIGON. The Project Independence blueprint is not completed yet.

Senator KENNEDY. Tell me how you are going to get those recommendations from Project Independence into the Interior Department's processes.

Mr. LIGON. In several ways, Senator.

First of all, we have set up an interdepartmental task force to work on oil and gas matters, with Interior and FEA representatives reporting on the Project Independence information as it is formulated. We work with the Department of Interior on this kind of issue and others every day.

Senator KENNEDY. Well, on this, for example, did you know about the September 18 memorandum?

Mr. LIGON. No, sir; I did not.

Senator KENNEDY. Well, what good is a task force in working out common policy when you do not even know something that is as important and basic as that?

Mr. LIGON. I cannot answer that question, Senator, other than to say that I did not see the memo and I am not sure it was made available for our people.

Senator KENNEDY. Do you really think they are going to pay much attention to task force recommendations? You heard that they can hardly wait to get a real sharp guy to make sure that these areas are leased. And what does that mean for all of those groups that came down to our Boston hearings, all of the citizens who came and talked about their concerns. It just seems that that was a sham.

Mr. LIGON. No, it is not a sham, Senator, anymore than the procedure that they must follow according to the law is a sham. This is just a step——

Senator KENNEDY. The procedure may be according to the law. But the idea of Project Independence and spending tens of thousands of public dollars was to have hearings up in Boston and around the country to bring citizens in to testify, to ask distinguished scientists, distinguished business groups, to testify. Now it does not appear that they are going to have very much of a voice at all. The Interior Department is just going to go ahead and get those leases out and fulfill the law in terms of environmental impact statement requirements. If in 8 or 9 months or a year from now and we do not see that those leases have been put out, then I will be very surprised. And then we will look back over what has been said, that you did not try to really mislead; that no decision has been made.

I think it is as clear as can be that we are going to see within a year leases put out in every one of those areas, if not, I am going to be very, very surprised.

As I understand it NOAA is now funding studies in the Gulf of Alaska and some other areas. Are you familiar with those? Do you know about them?

Mr. LIGON. Yes, I am.

Senator KENNEDY. Do they have one going on as well for the Atlantic area?

Mr. LIGON. I think the general studies——

Senator KENNEDY. I wish you had been here earlier, Senator Tunney. We found out you just did not understand the English language last week when you were listening to testimony from the people from the Interior Department. And we have all been really rather naive in even having this hearing here because everything is very clear and consistent and makes a whole lot of sense if you really understand what is going on down there.

Senator TUNNEY. If you understand what is going on down in Interior?

Senator KENNEDY. Can you tell me just about what those studies are and when they are going to be finished? What they cover?

Mr. LIGON. They are the base line studies, I think, not the environmental impact studies, Senator Kennedy. And as I understand it—and certainly Mr. Carter should be able to add here—they are looking at all available areas in the OCS that might have potential for resource development.

[The prepared statement of Duke R. Ligon follows:]

STATEMENT OF DUKE R. LIGON, ASSISTANT ADMINISTRATOR FOR ENERGY RESOURCE DEVELOPMENT FEDERAL ENERGY ADMINISTRATION

I. INTRODUCTION

I am most pleased to have the opportunity to appear before you today to discuss key issues related to Outer Continental Shelf (OCS) leasing. Although John Sawhill and I have testified several times on OCS leasing, I feel it would be beneficial at the outset of my statement to review the agency's general position on leasing as it relates to Project Independence.

As you know, the impetus for Project Independence was the Arab oil embargo, and the goal of Project Independence is to decrease our dependence on foreign energy suppliers so that we may substantially reduce the national social, economic and political vulnerability that results from such dependence. The attainment of increased energy self-sufficiency obviously requires both increasing domestic energy production and reducing demand through conservation efforts.

The development of the OCS is unquestionably important to the achievement of our national energy goals. In the near term, and under present technological and economic conditions, oil and gas reserves from the OCS hold great promise for reducing our dependence on imported oil. The U.S. Geological Survey's most recent studies indicate a resource potential offshore of 58–116 billion barrels of oil and 355–710 trillion cubic feet of natural gas.

Resource estimates are least reliable in areas where no drilling has taken place. But it is worth noting that undiscovered recoverable resources in the Atlantic offshore area alone may include 8–16 billion barrels of oil and 50–100 trillion cubic feet of natural gas, according to U.S. Geological Survey studies. There is no question but that the development of offshore oil and gas could significantly relieve the burden of energy dependence experienced by consumers on the East Coast.

At the same time that we urge the development of our resource potential in the OCS, we strongly support the goal of developing energy resources in an environmentally acceptable manner. As an example, the Federal Energy Administration has, as in the case of legislation dealing with Hells Canyon, voted "no" on an energy project because of environmental considerations. And we fully intend to continue considering environmental factors heavily in energy policy decision-making. We heartily endorse the environmental impact statement process in that environmentally sensitive areas are screened out of the lease bidding process.

I feel it is also important to state at the outset that the Federal Energy Administration endorses the concept of regional participation in government decision-making. We are fully aware that local conditions vary significantly. State and local officials, as well as the general public, should and must play an important role in energy matters, particulary where there are strong regional implications.

Having given an overview of the Federal Energy Administration's position on several broad but relevant issues, I would like to focus now on the more specific areas of concern to the Committee. These issues relate to: (1) The timing of offshore lease sales; (2) The amount of acreage offered for lease; and (3) Federal/State relationships.

II. THE TIMING OF OFFSHORE LEASE SALES

Experts who have analyzed the reasons for our failure to develop domestic oil and gas resources in sufficient quantities in the past suggest that the OCS leasing programs during the 1950's and 1960's were a contributing factor of some significance. The pattern of leasing was erratic, and no lease sale schedule was even published until 1971.

If we are to learn from the past, it would seem important that a tentative lease sale schedule be published and, where suitable, adhered to, so that the oil and gas industry will be able to make appropriate investment decisions. Investment dollars are deterred where regulatory and leasing uncertainty exists. To the extent that the prospect of new acreage opening up offshore attracts investment in domestic oil and gas exploration and development, a lease sale schedule plays an important role in our ability to develop national energy independence.

It is important to remember, however, that a lease sale schedule is always tentative in that the final decision regarding a proposed sale can only be made after all the relevant information is received and carefully considered. Any schedule is contingent upon the completion of the pre-lease investigations for possible social, economic and environmental impacts.

No decision is made, moreover, without reference to regional interests and ramifications. In this connection, potential timing conflicts are analyzed. The Federal Energy Administration and the Department of the Interior are well aware that, pursuant to the Coastal Zone Management Act of 1972, various coastal states have undertaken the development of coastal zone management programs designed to ensure the orderly development of their coastlines.

Under the Act, thirty coastal States and four territories are eligible to apply to the National Oceanic and Atmospheric Administration for funds to implement programs which meet certain specified criteria including adequate consideration for the siting of energy facilities which have more than local importance. While California has done a great deal already in terms of developing a Coastal Zone Management Plan, this Plan is not scheduled for completion until January 1976. Plans being developed by other States may well be only in the initial drafting phase; it is not inconceivable that such plans may not even be completed until 1980 or perhaps beyond. An important question then is: should all lease sales be

postponed indefinitely until State Coastal Zone Management Plans are ready for submission to the State legislature or, in the alternative, ratified by the State legislature?

It would seem that some flexibility in the timing of proposed lease sales could be maintained, particularly with regard to the development of Coastal Zone Management Plans. It seems clear that one of the purposes of the Act was to coordinate such State/Federal planning. On the other hand, it should be recognized that the holding of a lease sale and coastal management decision-making need not necessarily conflict in terms of timing.

First, there is a significant lead time, involving years, between a lease sale and actual production. It could well be that, even if a lease sale were held prior to the completion of a State's coastal management plan, onshore facilities to process increased oil and gas production would not be needed until the Plan had been presented to the State legislature and, hopefully, ratified in a timely manner.

Second, it would be difficult for a coastal management team to make decisions on facility siting prior to actual drilling. Until wells are actually drilled, it is impossible to say with precision where the best fields are. Once wells are drilled, siting decisions can be made. It may be, for example, that most of the oil and gas to be found offshore from the Atlantic Coast would be so many miles out to sea that the most economical means of transportation inland would be by tanker, rather than by pipeline.

III. THE AMOUNT OF ACREAGE OFFERED FOR LEASE

There is wide support for the view that the amount of acreage offered in lease sales has been too small. The Department of the Interior could expand the lease offering from a current program of about three million acres to 10 million acres leased in calendar year 1975. The question is, how much acreage should be offered and leased to ensure the achievement not only of national energy objectives but also of goals related specifically to OCS leasing.

The achievement of our national energy objectives requires an expanded leasing program, and the Federal Energy Administration strongly supports increasing the amount of acreage over what has been offered in the past. At the same time, we recognize that the Department of the Interior's OCS leasing program goals are to: (1) Provide orderly and timely resource development; (2) Receive fair market value; and (3) Protect the environment.

It seems to us that the Department of the Interior is in the best position to make the judgment as to what size lease sales will best meet the program goals outlined above. Extensive research has been done on this subject by the experts who have analyzed the related facts. It is important to recognize that if the Interior Department's final decision is to release a lease sale schedule covering large acreage offerings, the decision will not have been made lightly but will be the result of such extensive studies. It is also important to remember that if, through the public hearing and comment process, the Interior Department's position is correctly challenged, the decision will be changed.

As to the Secretary's decision on a specific sale, the options are numerous. He may decide, after all appropriate information is evaluated, to offer all tracts covered by the pre-lease investigation, remove certain tracts whose development may have serious environmental effects, or not conduct the sales at all. Again, I want to emphasize that even if a lease sale schedule is "firm," it is always tentative in that a wide variety of factors must be considered before the final decisions are made relating to that sale.

IV. FEDERAL/STATE RELATIONSHIPS

Under the present leasing system, the following steps are involved in Federal leasing decision-making: (1) An area is selected for nomination of tracts by industry; (2) A number of tracts are designated for study from the nominations; (3) Environmental information is gathered by the Federal government; (4) A draft environmental impact statement is prepared considering the effects of leasing and development on the environment; (5) The statement is published and offered to the public for comment; (6) A public hearing is held to receive comments from all who wish to testify. Written comments are reviewed regarding the contents of the statement; and (7) All information is considered in the preparation of a final environmental impact statement.

These steps are all preliminary to the Secretary's decision to lease OCS lands. The procedure is designed to assure the opportunity for all responsible public and private points of view to be expressed. Interested parties are encouraged to

involve themselves at appropriate stages in the development of the environmental impact statement. A Final Secretarial Decision on OCS leasing is predicated on the assumption that National, State and Local governments have been involved in the process from beginning to end.

IV. CONCLUSIONS

It is vitally important that Americans not become lulled by the prediction of general energy availability this winter—or in the years ahead. As you know, natural gas curtailments are expected to be 81 percent higher than they were last winter. The combination of (1) a severe winter; (2) a coal strike; and (3) the natural gas shortage could well mean job lay-offs and economic hardships.

As long as we are dependent for a large supply of energy from a fully operative OPEC cartel, we will remain, moreover, vulnerble, both to embargoes and exorbitant price increases. OPEC world oil control has already had severe repercussions on the fragile fabric of international trade and the world economy.

Developing domestic energy independence is a national imperative. Failure to do so will increasingly affect the social and economic life of every American citizen. The Outer Continental Shelf is a key near-term solution to our national energy dependence problem. I personally believe that the issues related to offshore leasing can and must be worked out in the spirit of mutual understanding and cooperation. I hope that my testimony today has been helpful.

Thank you for the opportunity to present a statement on this most important subject.

Senator KENNEDY. Could we get to the financial part of this? What can you tell us about the information that has been gathered on presale values of these areas to assure that the public is going to get a fair return for any leases?

Mr. CARTER. Senator, now our approach is that prior to a sale in an area, we buy most—maybe not all, but most—of the information that has been generated on that area as to its resource potential. We also get all of the information available from other governmental sources and from our own resource exploration. We examine each tract in some detail in order to try to arrive at several figures: (1) the estimated recoverable resource; (2) the cost of development. Then we look at the marketplace to see what the sale price is going to be. And we plug in a figure of acceptable return on investment to come up with what we think is a fair sale price for that particular tract.

Then that information is not made available to anyone until after the sale has taken place. At that time we compare the bids we got with our own assessment of what it is worth, and we go through a procedure which results in our accepting some and rejecting others on the basis of whether we think the price is fair.

We then—we publish most of our information and our assessment of what the tracts are worth. We do not on the ones we reject. I think we keep back some information because we intend to offer them again. We do not now publish the proprietary geological and geophysical information that we have obtained.

What we have proposed is a rulemaking that would provide for the release of certain information after the sale, not before the sale, but rather after the sale, so that the public and the concerned committees of the Congress in their oversight capacity can make sure that we did a good job.

It is a tough balancing act to assure that the geophysical companies, on the one hand, who make their living out of going out and finding the data, are not too adversely impacted; and on the other hand, making enough information available to ourselves and to others to

assure that the process is one that is fair and protects the public interest.

I am hopeful that within another 3 weeks or so, we will publish a rule on this question. And it will be available for comment and then finalization in the near term.

Senator KENNEDY. Now, how much have you spent on that, for example? How much money have you spent in Interior for those evaluations?

Mr. CARTER. For any particular sale, or——

Senator KENNEDY. On this 10 million acre area. How much have you spent on that? Not that that would necessarily be the only determinant in the adequacy of data, but I would be interested in getting the information.

Mr. CARTER. I can give you the information; I do not have it on the tip of my tongue right now, but I will be happy to supply you.

Senator KENNEDY. Are you familiar with the recent leasing of a certain Colorado oil shale tract which was valued at $5.6 million, and which was sold for $210.3 million, and now has been found to be worth up to $1.5 billion? We are interested in the procedures which are being followed in the Interior Department to make sure that the public interest is protected and that it is not going to be conducting a giveaway program, in effect. And I would like a little bit more than the general comments that you made here about gathering information, reviewing data, exercising prudent judgment. Have you got somebody here who could give us more information about exactly what has been done in these particular areas? I would be very interested, particularly as it applies to the Atlantic area. I do want it for all of them—the Gulf, and Alaska, too.

Mr. CARTER. Yes, sir.

Senator KENNEDY. That was a pretty big loss, selling a lease for $210 million, and its actual worth is $1.5 billion. Those are public lands. Our citizens lost a great deal on that sale.

Mr. CARTER. I am prepared to talk about the oil shale matter if you would like. I am also prepared to talk a little bit, but not in definitive detail, on the OCS. Would you like me to comment on the oil shale matter, because I do not agree with your statement.

Senator KENNEDY. Yes, I am most interested in the procedures you are following on the 10 million offshore acres that is what I am primarily concerned about—I was using the other as an illustration. I am primarily interested in what assurances you are going to be able to give us that the offshore leasing program is not going to be a billion dollar giveaway program.

Mr. CARTER. Over the years we have purchased a considerable amount of geophysical data on the East Coast. I think almost all of what is available. We have done some experimentation ourselves, conducted some efforts, so we have pretty good data of the broad picture on the east coast at this time.

Once we schedule an area, say it is the mid-Atlantic, for a potential lease sale in the end of 1975, we will take 1975 budget money and buy additional data, because as soon as we schedule an area, industry will do new work; because if leases are going to be sold, it is more important to know the details than it is if you are just kind of studying the general terrain.

We will buy new data, and we will put a team of people in the geological survey to work trying to draw up their assessment of the resource value of each individual tract that we are preparing an environmental impact statement about. That takes quite a long time, and it is substantial budget item, both to buy the material and to keep the people working for that period of time on those tracts.

As I mentioned, we will have an individualized assessment of each tract by the time the lease sale is conducted, and we will compare that with the prices that we received.

I can even give you a handout explaining in much more detail how we go through the——

Senator KENNEDY. Well, yes, we want that. I wish you would give us a detailed memorandum on this.

Mr. CARTER. I have got one with me; I would be happy to do that.

Senator KENNEDY. You can submit it for the record.

[The document referred to follows:]

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., December 17, 1974.

Hon. EDWARD KENNEDY,
U.S. Senate,
Washington, D.C.

In reply Refer to: 1373 (520)–1600 (722).

DEAR SENATOR KENNEDY: During recent hearings on the proposed Outer Continental Shelf leasing program, you requested certain cost information on the evaluation of areas proposed for lease in 1975. The Department's budget for OCS Management for FY 1974 and FY 1975 was about $81.5 million. Of this total about $55.4 million are related to environmental, geological, geophysical, economic, and other resource study and evaluation. The remainder is related to leasing, lease management, and administration.

Of the $55.4 million related to study and evaluation, only part can be specifically identified with sale proposals for FY 1975. There are:

Purchase of Geophysical data prior to FY 1975:	
California	$737, 400
Alaska	1, 166, 300
Atlantic	146, 300
Estimated cost of additional Geophysical data to be purchased in 1975	725, 000
Base line data contract studies for environmental, economic and other resource data:	
Mid-Atlantic	2, 750, 000
Gulf of Alaska	1, 722, 000
Southern California	2, 600, 000
South Texas	2, 300, 000
Total	12, 147, 000

The remaining $43.2 million is for contract studies for sale proposals in other years and for salaries and travel of departmental employees. Since the employees engaged in the OCS program are unable to identify their effort with a particular tract, it is not possible to identify the cost of salary and travel related to tract evaluation by sale. Generally the tract under consideration for sale ultimately becomes part of several sales conducted in two or more calendar years.

You requested in the hearing that we provide material explaining our procedures for assessing bids received for OCS tracts. Attached is a summary description of our post sales analysis matrix.

Sincerely yours,

JARED G. CARTER,
Deputy Under Secretary.

Enclosure.

Post Sale Analysis

After a sale, each high bid must be analyzed in order that the accept or reject decision may be made by the BLM OCS field office Manager. The Post Sale Analysis Chart allows consideration of the three major leasing objectives: (1) receipt of fair market value, (2) environmental protection, and (3) orderly and timely resource development. The chart technique was developed to insure consistency in decision-making and to provide a permanent record of each factor considered by the Manager.

A general explanation of each column in the chart should demonstrate the chart's usefulness in bid analysis. The chart's columns are organized in a manner that separates considerations for each of the three leasing objectives.

Accept/Reject—These columns are left blank until the decision has been made. One of the two columns is then checked for each tract.

Prospect Number and Tract Number—These columns are used for identification purposes.

(1) Type of tract—shows whether the tract is draingage (I), development (II) or wildcat (III). Each time a frontier area is entered for leasing, all tracts will be Type III.

(2) Total High Bid.

(3) GS Reliability Rating—refers to the quantity and quality of Geological Survey's data, and ranges from A to E with A referring to a drainage tract with very good data available and E designating a wildcat or development tract with very little data available.

(4) Mean of Range of Values (ROV)—The mean of the range of values is the GS presale estimate of the value of the tract. The program used by GS generates 500 values for a tract based on variations in input parameters. The mean of these values is one of the values considered by the Manager in the decision-making process.

(5) High Bid as Percent of Mean of ROV—shows the relationship of the high bid to the value placed on the tract by GS.

(6) Discounted Mean of ROV—The Mean of the range of values is discounted by 10 percent per year for two years. A tract for which a high bid is rejected may not be re-offered for lease until final disposition of any appeal that may be filed. In the past, appeals have required a minimum of two years to process. The mean value is discounted to reflect the present value of the loss to the government. It is another value for consideration by the Manager.

(7) High Bid as Percent of Discounted Mean of ROV.

(8) Average Evaluation of Tract—This evaluation is calculated by summing all bids on the tract and the government's pre-sale value and dividing by the total number of bids plus one. This number represents an average value of the tract. Its significance increases with the number of bids submitted on a tract.

(9) High Bid as Percent of Average Evaluation of Tract.

(10) Number of Bids on Tract—reveals the degree of competitive interest on the given tract.

(11) Average Number of Bids per Tract by Type of Tract—This number reveals the average number of bids received by all drainage tracts, by all development tracts, or by all wildcat tracts depending upon the type of tract in question. The three types of tracts are separated in determining averages because drainage tracts typically receive fewer bids than the other types, and this might distort the average if all tracts were considered together.

(12) Tract's Deviation from Average/Mean Deviation by Type of Tract—The average cannot be regarded as a typical value if the scatter or dispersion around it is very large. Therefore, the mean deviation by type of tract is calculated as a measure of dispersion around the average.

(13) Bidding Performance of High Bidder by Quarters—shows how many times the high bidder on the tract in question bid at the sale, and where the high bidder's bid stood in relation to other bids on tracts of interest.

(14) Average Number of Bids on Tracts on which High Bidder Bid—shows the level of competitive interest in tracts bid on by high bidders. Columns 13 and 14 are used together to evaluate the high bidder's strategy. The analysis helps to identify the speculative bidder.

(15) Potential Environmental Hazard—Each tract is rated in the Environmental Impact Statement as to its potential environmental hazard. These levels or zones, such as minimal or moderate, are listed on the chart for the Manager's use.

(16) Geologic/Bottom Hazards—Shortly before the sale, members of the BLM Environmental Assessment Team review GS's latest resolution data on the sale tracts, and provide a report to the OCS Manager detailing determined geologic/bottom hazards. Information from this report is shown on the charts as another measure of environmental risks associated with leasing and development of the tract in question.

(17) History of Tract—Indicates nominations received on tract for current and past sales, whether ever offered and ever leased previously.

(18) Miles from Shore.

(19) Miles from Pipeline.

(20) Water Depth Meters.

(21) Other Considerations—Provides space for listing any other factors having impact on the decision such as special stipulations to be imposed on tract if leased and existence in fairway.

The remainder of each page of the matrix consists of a map which shows the tracts up for bid and those adjacent to them. Leases in existence and expired leases are delineated.

1	2	4	3	5	A	7	9	11	13	14	16	17	18	19	20	21	22	23			B	C	D	E	
ACCEPT	TRACT NUMBER	ACRES	TYPE OF TRACT	TOTAL HIGH BID $ (H. B)	G.S. RELIABILITY RATING	MEAN OF ROV $	H.B. AS % OF MEAN OF ROV	DISCOUNTED MEAN OF ROV $	H.B. AS % OF DISC. MEAN OF ROV	AVERAGE EVALUATION OF TRACT $	H.B. AS % OF AVG. EVALU. OF TRACT	# BIDS ON TRACT	AVG. # OF BIDS PER TRACT BY TYPE	TRACT DEVIATION FROM AVG. / MEAN DEVIATION BY TYPE	1+	BIDDING PERFORMANCE OF HIGH BIDDER BY 1/4 'S 1+2	3+4	AVG. # OF BIDS ON THIS TRACT BY HIGH BIDDER	POTENTIAL ENVIRONMENTAL HAZARD	GEOLOGIC/BOTTOM HAZARDS	HISTORY OF TRACT	MILES FROM SHORE	MILES FROM PIPE-LINE	WATER DEPTH METERS	OTHER CONSIDERATIONS
REJECT																									
PROSPECT																									

Senator KENNEDY. Who do you buy this information from?

Mr. CARTER. The short answer is whoever has it; but basically it is from certain companies who are in the business of conducting geophysical surveys. They make their living that way. They cannot go conducting these surveys without a permit from us, so we know who has got data, and we can buy it from any of them. Normally we buy it from people conducting what we refer to as "group shoots"; that is, a group of companies finance the initial shoot. It is available for anyone to come in and buy at a certain price. We buy ours that way, rather than hire an individual shot for the Department, because we get it at about one-twentieth the cost, or one-tenth the cost, by plugging into a group shoot rather than conducting one of our own.

Senator KENNEDY. Do the oil companies not usually have better information than Interior on any particular area?

Mr. CARTER. I do not believe so, Senator. Reasonable men argue about whether or not they can interpret it better than we can, but we have access to the same sources of information that they do. Once in awhile I suppose a company will conduct an individualized exploration activity that we choose not to buy because the cost is too high.

Senator KENNEDY. Do you not agree, then, that at the time of a lease sale the oil companies have better information?

Mr. CARTER. As a general proposition, no. Generally we have better information than any one company.

Senator KENNEDY. That is not what you said on April 23—and I will read your testimony—let me give you the reference: National Ocean Policy Study hearing page 44.

> I suspect the industry probably has better information than we do by the time they lease or purchase land. They spend more money in attaining that information. We purchase a good bit of it. We have our own experts in the Geological Survey that examine it to a point where we are convinced that we have a reliable assessment.

And then when Dr. McKelvey was asked the same question, he said, "I think in the aggregate, there is no question that industry does have more information."

Mr. CARTER. I say—but I am referring to the—Senator, if you would allow me to explain it to you.

Senator KENNEDY. Sure.

Mr. CARTER. We will have probably more data than any individual company in a lease-sale area because, first of all, if you have geological data from core drilling or from other wells in the area, we get it all free. Then we buy a good deal of the geophysical data. Now, your information that relates to whether or not there is oil there and how much depends on interpretation, as well as the raw data. And that is where the companies are a lot bigger, and where many people argue that where they are better staffed and better skilled than we are is in the interpretation of the raw data.

And as I mentioned to you today, I suspect that in the interpretation phase they may be a little bit better off than we are, but as far as raw data, I doubt it.

Senator KENNEDY. Well, you say that as far as interpretation of raw data is concerned the oil companies have better information than the Government. But it just seems to me that interpretive data is critical when you are talking about the leasing of public lands and that the industry has better information. I do not think

that should be so. I think we ought to have at least equal or better information, or that you should be given additional assistance if that is what you need to get the information. I just do not see how the public interest is well served when the private companies have better interpretive information than the Government which holds these public lands for its citizens.

You are familiar with what the Academy of Science has said about the information that the public has and that the Interior has on offshore lands? Are you familiar with the general conclusions on page NAS 16?

Mr. CARTER. I did not come prepared to talk——

Senator KENNEDY. No, I just mean generally familiar. This is a very, very important problem and a critical issue. And they say:

> As a consequence, assessments of the national treasure of oil and gas, including those reviewed in the CEQ report, are little more than sophisticated guesses as to how much resource is available; even to some extent in explored areas. The Committee wishes to stress the uncertainty that currently prevails in these estimates of oil and gas resource availability. And to accomplish the goal, we recommend that the Federal Government acquire and make public, together with supporting data and analysis, the best possible estimate of our OCS oil and gas, based on the new techniques just as has traditionally been done for other resources such as coal and oil shale. This estimate can probably be obtained rapidly, and while the data processing is expensive, the cost is relatively low compared with the potential benefits. More accurate information regarding the resource potential will facilitate not only the formation of national energy policy, but also the assessment of environmental impact.

What is your reaction to those observations by the Academy of Science?

We are talking about public lands worth trillions of dollars, if you consider the total value of potential oil and gas resources.

Mr. CARTER. Senator, the question of how you go about deciding what price to accept for an OCS lease, it is, as you point out, a fairly tough one. I believe our record is excellent. We have received a great deal of money in the last couple of years for OCS leases. In fact, the criticism we hear most commonly is that we are getting too much; that the front-end money requirement to develop oil and gas in the OCS is so great that not enough capital is left to spend on drilling holes. And it is drilling holes that produce oil and gas, not paying the Federal Treasury a great deal.

So people have criticized us for the very stringent standards that we apply in evaluation, in post-sale evaluation. We are going to try to conduct a royalty bidding experiment the 16th of this month to see if we can alleviate that problem; to see whether, in fact, it is a problem. But in the last two sales we have conducted we have rejected about 18 percent of the bids that we have received because our evaluation showed that the bids that were submitted were less than the tract was worth.

I would also point out that the prime source of protecting the public interest in these matters is not our evaluation, but it is competition in the sale of these tracts. There are an awful lot of people who want to buy OCS leases, and when you get four or five bids on a tract, and they range over the lot the way they do, you reach one conclusion very quickly and that is that very intelligent, well informed, reasonable men differ about the prospect of oil in an area and about the value of what is there. And as long as you can assure a system that produces a

good bit of competition, then I personally believe that you are a long way toward home in protecting the public's interests in getting a fair market value.

But just to assure that that is not the only thing that we rely on, we go to a considerable amount of time and spend a lot of money producing our own capability of assessing this area. We probably make some mistakes. So does the industry. People will pay $100 million for a tract and wind up without any oil on it. So there is no sure way of determining the value of an area. You have to strike a balance between protecting the public's interests and being 100 percent sure that you know all that you could know about a tract.

I believe that our system works very well, but we are flexible. We are conducting some experiments on bidding procedures, as I mentioned, and we are constantly looking at our evaluation procedure to make sure that it is responsive to the needs we have.

Senator KENNEDY. Now you may feel that you are doing everything. The National Academy of Sciences, of course, reaches an entirely different conclusion. They think you ought to get all of the information yourself rather than relying on industry.

Mr. CARTER. Senator, the cost of doing that—we considered very hard coming up with a request for a budget item to buy individual shoots of information in 1975. The cost of doing it that way as opposed to participating in a group shoot is—Red, do you recall? It was somewhere in the neighborhood of between 10 and 20 times more costly if we were going to do this ourselves.

Senator KENNEDY. What kinds of figures are we talking about?

Mr. CARTER. Well, you are talking about a difference of a budget of about $10 million or $11 million for this kind of operation or a budget of over $100 million for this kind of an operation.

Senator KENNEDY. And what kind of value is there in terms of potential oil resources?

Mr. CARTER. There is a great deal of potential oil resources, but the question is what are you getting by hiring your own individual seismic shoot as compared with what you get if you go out and plug into someone else's, and the difference is very small in what you get.

Really, what you get is the ability to make the information public before the sale. You do not get better information, but you acquire the right to make it public before the sale, which we do not now have. And in our judgment that is not necessarily worth the increased amount of money that you would have to pay for it.

Senator KENNEDY. As I understand, in December 1973 there were 89 tracts bid on that had a total pre-sale evaluation of $146 million and the total bids were $1.4 billion.

Mr. CARTER. I am not familiar with that particular sale, Senator, so I cannot say whether that is right or wrong.

Senator KENNEDY. We are talking in relationship to these areas, of billions and billions of dollars of assets that belong to the American people. I think it might be different if you were talking about privately owned land and whether an individual might want to speculate. But for land which is owned by the public, I think there is an entirely different standard that has to be applied and there are some very legitimate questions in terms of the adequacy of the procedures which you follow within the Interior Department and your reliance upon

industry information for establishing the value of that land. This is something we are extremely concerned about.

Mr. CARTER. Senator, as I recall the figures since the OCS has been leased, about 66 percent of the value of all of the oil and gas that has been removed from the OCS has come to the Federal Treasury in the form of bonus or royalty payments, and a lot of people believe that that is too high a percentage.

Remember, we get paid——

Senator KENNDY. What do you think?

Mr. CARTER. We get paid for every dry hole that is drilled on the Outer Continental Shelf. The tract that drew $211 million in one recent lease sale, I noticed that the industry announced the other day that they had closed a hole without any discovery in that tract. We estimated that tract to be worth somewhere in the neighborhood of $4 million, I believe.

What I am saying is that our system is a very good one. It is not perfect. I do not think throwing a lot more money at the problem, though, is going to make it substantially better.

Senator KENNEDY. People are not suggesting just throwing more money in. It is just whether you are getting your own data and developing your own information or relying on industry. That figure is going to constantly go down as the wells keep pumping out, is it not?

Mr. CARTER. Yes; percentagewise.

Senator KENNEDY. Senator Tunney?

Senator TUNNEY. Thank you very much, Mr. Chairman.

First of all, I would like to compliment you, Mr. Chairman, in holding these hearings today. I think that they are extremely important. I think that particularly in light of the hearings that Senator Stevens and I attended in California under the auspices of the Ocean Policy Study and the kind of testimony we got there, and contrasting that testimony with the memorandum dated September 18, 1974 by Under Secretary Whitaker. These hearings are most appropriate, and I feel that the leadership you have shown in holding these hearings and getting clarification of the record is most important.

I would just like to ask you, Mr. Carter, when Mr. Lindgren came out to testify on policy before our committee and he indicated that he did have the right to testify on policy, was he aware of this memorandum?

Mr. CARTER. I assume so. I do not know whether he was an addressee or not. If he was not aware of the memorandum, he was certainly aware of the necessity of establishing a leasing schedule.

Senator TUNNEY. Would it not have been appropriate, considering the fact that Senator Magnuson had written to Secretary Morton and asked him to appear at these hearings, and the Secretary begged off saying that he had other commitments, and you sent out Mr. Lindgren to testify for the Department on policy, to make sure that Mr. Lindgren knew about this very important policy statement that was contained in this memorandum?

Mr. CARTER. No; it is not a very important policy statement.

Senator TUNNEY. It is not an important policy statement?

Mr. CARTER. No. We have been trying to establish a leasing schedule for 1975 for the past several months, Senator. Establishing a leasing schedule does not constitute making a decision to hold

leases in certain areas. It constitutes a decision to look at certain areas for the purpose of taking the necessary steps that will allow you to make the necessary decision.

For instance, the southern California sale has been on our leasing schedule for, I believe, since 1971; but certainly since July 1973, those have been published. If you do not put an area on your leasing schedule, you do not have the basis for preparing an environmental impact statement or for doing the necessary other detailed studies that will allow you to make a decision whether or not to lease.

So what Mr. Lindgren told you was entirely consistent and in no way inconsistent with the decision to establish a leasing schedule for 1975.

Senator TUNNEY. Mr. Ligon, were you aware of this memorandum when you came to testify?

Mr. LIGON. No, sir, I was not.

Senator TUNNEY. You were not aware of it?

Mr. LIGON. No, sir.

Senator TUNNEY. Do you think you might have changed your testimony if you had been aware of it?

Mr. LIGON. No; I do not think so at all. I think, Senator Tunney, that this is an example, as Mr. Carter has explained, of an announcement of the intent to certainly create a leasing schedule, and once that leasing schedule has been put together, I think as you go through the legal procedural requirements, that you must go through to determine whether or not to acutally hold that lease sale. Additional pieces of information are relevant, as we talked about in Santa Monica, such as the—certainly—the California Coastal Zone Commission's input into any type of issue such as this.

Senator TUNNEY. I am sorry that I do not understand the language that probably is peculiar to the Department of the Interior, having never served in the Department of Interior such as Senator Stevens.

I would like to understand what the meaning of the word, the Under Secretary wants a "firm" leasing schedule. "Firm" is the word that I am interested in. I suppose Senator Kennedy has gone into this earlier and I am sorry I could not be here. I was charing some other hearings.

"Firm" leasing schedule does not mean "firm," is that right?

Mr. CARTER. Senator, this memorandum was written to people in the Department addressing problems in the Department. We have for some time been trying to establish a leasing schedule. There has been a considerable amount of debate about two or three points. One of them is what areas are we going to try to lease. That is, are we going to try just one frontier lease sale in 1975, that is, mid-Atlantic or Gulf of Alaska, or are we going to try them both?

Another issue has been should we offer only 10 million acres or should we try to lease 10 million acres? Another is should we offer on the Atlantic, if you decide to schedule the Atlantic, should you offer only one area or should you try to get people drilling in as many places as possible, because thereby you would increase the probability of making a discovery. And it is oil and gas we want, not leases.

So this memorandum was for internal purposes addressed to issues that were being debated in the Department, and what it calls for is to knock off the debate, produce a schedule, and then we can get a

decision about what schedule we are going to put our resources on for 1975. And the reason of the timing was that we wanted a schedule established so that we could publicize it to the Governors and the representatives at this October 3 and 4 meeting.

We did not meet that objective but that is what we were trying to do. And unfortunately, someone thought that by making it a news release rather than what it was intended, an internal memorandum addressed to some internal problems, that it would be worth a great deal of discussion.

I frankly do not think it is worth a great deal of discussion. People can agree or disagree with the areas we scheduled. But the question of whether the Interior Department ought to prepare a schedule of what areas it is going to study for possible leasing strikes me as a very unimportant issue. And I would hope that the Congress would be a lot more concerned if we were not putting together a schedule and were not trying to allocate our resources in a certain way than if we are trying to put together a schedule and allocate our resources in studying various areas.

Senator TUNNEY. You see, if the memorandum were written in such a way that the Under Secretary wants to prepare a schedule, a leasing schedule, it would be quite different in its impact than the Secretary wants a firm leasing schedule laid out that definitely includes the following items: 10 million acres leased in 1975, not just 10 million acres offered.

Now I am awfully sorry. I am listening to you but I am obviously not reading you because we are on a different wavelength. I want to know how you can possibly indicate to this committee and to the public that that does not mean just what it says, that you want to have 10 million acres leased in 1975 and not just 10 million acres offered. And the sale in 1975 in both Alaska and the Atlantic and an alternative if No. 2 fails, which would still allow the leasing of 10 million acres. Now that does not say prepare a schedule. That does not say offer 10 million acres. What it indicates to me is just what you said. It was intended to knock off debate in the Department and make it very clear that we are going to have 10 million acres leased.

Mr. CARTER. We want a schedule that would allow us to try to lease the land after that schedule is established, Senator. The law and common sense requires that we do a great deal of studying about each of those proposed leases to see whether or not you are going to have that lease sale. And as I mentioned to you, the southern California sale has been scheduled for sometime but no decision has been made whether to hold that lease sale.

Senator KENNEDY. Would you yield on that point?

Senator TUNNEY. Yes.

Senator KENNEDY. Can you tell us now, are you going to lease Georges Bank or not? Do you expect to have a lease there or not?

Mr. CARTER. We have not made the decision called for by this memorandum. Some recommendations were made. There still exist differences of opinion. I personally do not believe that Georges Bank will be in the 1975 schedule. It may be, because if you go the alternative of trying to hold relatively small sales in the promising areas, then Georges Bank would probably be one of them. And if you are looking for oil and gas, a lot of people believe that it makes

sense to try to explore the areas where people in the business think there is oil and gas, and I mean by that competent geologists for whomever they work. But I doubt that Georges Bank is going to be on the 1975 lease schedule because you do not have as much shoreside infra-structure to accommodate lease sales as you do in other areas in the Atlantic, and it just would not be the place where, for a relatively smaller amount of money, you could make a determination whether oil and gas is on it.

Senator KENNEDY. This is a final question. When are you going to make that public, when you are going to announce the areas to be leased?

Mr. CARTER. We are going to make the schedule public when a decision is made what our schedule is.

Senator KENNEDY. When is that?

Mr. CARTER. I am hoping that is in very short order.

Senator KENNEDY. When is that?

Mr. CARTER. I do not make the decision.

Senator KENNEDY. Is it weeks or months?

Mr. CARTER. Definitely weeks.

Senator KENNEDY. Is it within a couple of weeks?

Mr. CARTER. I certainly hope so. As the memo indicates, we wanted it before now.

Senator KENNEDY. If it is going to be made in a couple of weeks you would probably know about it, would you not?

Mr. CARTER. I told you I do not make the decision, so I cannot tell you when it is going to be made and what it is going to be.

Senator KENNEDY. Thank you.

Senator TUNNEY. Thank you.

I would just like to quote from Mr. Lindgren's testimony before the Commerce Committee 2 weeks ago in California, and I might say it was after this memorandum had been written:

> Mr. LINDGREN: First, if I might follow through we are now proceeding with the studies, environmental impact study, other studies. We do not think they should be delayed. Secondly, we believe that by the time it is possible to make a study, that is next summer, we will have the benefit of all the studies. So at this time we do not see that there is reason to delay a decision one way or the other pending completion of the state coastal zone plan, the submission to the legislature, the adoption or modification of it by the legislature, but I would like to add that when the time for decision does arrive, be it early next summer or later, that one of the issues that will have to be examined at that time is whether or not the decision should be further delayed. That is definitely one of the options that is available to the Department at that time.

"We do not think, however, that a decision to delay should be made now, but should be examined after all of this material is collected and the studies are completed and then that would be a more sensible time to make the decision."

Now I am just one Senator trying to represent 21 million people in my State, also 200 million people in the United States, and I would just like you to assist me in trying to reconcile Mr. Lindgren's testimony which was made to a Senate committee, presumably was honest testimony to the best of his ability to identify the facts as he understood them. Where is the memorandum that was written, that of September 18 by Mr. Whitaker?

Mr. CARTER. It was written by me.

Senator TUNNEY. That the Under Secretary wants a firm leasing schedule, 10 million acres leased, not just 10 million acres offered. You reconcile those two pieces of evidence.

Mr. CARTER. Yes, sir, I certainly will.

As I mentioned, one of the debates in the Department is whether or not we ought to offer 10 million acres, which experience indicates would wind up with about 4 to 6 million acres leased, or whether we ought to offer enough to lease 10 million acres.

Now if you want to lease 10 million acres, you have got to be prepared to offer something in the neighborhood of 16 million acres or you will not lease 10. So what this memorandum says is come up with a schedule that will offer enough acreage so we can reasonably project that 10 million would be leased. Do not just come up with a schedule that offers 10 million acres. OK, that is what that means.

Now the way you reconcile it with Mr. Lindgren's testimony, with which I agree entirely, is that scheduling a lease sale does not mean that you have made a decision to hold a lease sale. What scheduling it amounts to is that it is a proposal; it is the trigger to justifying preparing an environmental impact statement. You cannot prepare an environmental impact statement unless you have a proposal, as Senator Stevens has pointed out. By scheduling a lease sale you then have a proposal and you prepare an impact statement, you prepare resource studies, you prepare other studies, and then you can make a decision after all of those studies are completed. As a matter of law and a matter of common sense you cannot make a decision until after the studies are done.

The southern California lease sale has been scheduled, I think as long as 2 years and probably even longer. And we began the detailed studies on it well over a year ago. Now that does not mean that we have made a decision to hold a lease sale. We have just begun the process of making the necessary studies. But we could not have begun that process unless we had scheduled it for more detailed study at an earlier time.

Senator TUNNEY. We had a witness, Mr. Gesner, testify at our hearings in California, and I would just like you to comment on the truth or the inaccuracy of his statement.

He said, and I am quoting:

> I would like to point out in the last 16 years 10 of the 11 heads of the Oil and Gas Department, the Department of Interior, have since gone to major oil companies.
>
> I would submit that that does not necessarily mean they were on the payroll of the oil companies, but I would suggest that they did not do anything serious during their tenure that they did not get employed by the oil industry.

Is it true that 10 of the 11 heads of the Oil and Gas Department, Department of Interior, have since gone to major oil companies?

Mr. CARTER. I do not know, Senator, but the Office of Oil and Gas, which Mr. Ligon used to head in the Department of Interior, is no longer in the Department of Interior. It is in FEA. But I do not know.

Mr. LIGON. I must be number 11, Senator Tunney, because I, of course, am in the government and have no intentions at the present time of going into the oil industry.

Senator TUNNEY. What I would like to know is how many Assistant Secretaries for Mineral Resources in the last 10 years have

gone to work for the oil companies after they left the Department of Interior?

Mr. CARTER. I do not know.

Senator TUNNEY. Could we have a submission for the record on those two points?

Mr. CARTER. I am really not sure that that is the Department of Interior's business who its former employees get jobs with, and I certainly do not think that it bears upon the honest conduct of the office by the people who hold it.

If you would like as a courtesy I will try to find out that, but I certainly do not want to indicate in any way that the way we conduct our business depends upon how people in the past have sought employment.

Senator TUNNEY. Mr. Ligon, your testimony at our hearings was as follows:

> Senator TUNNEY. Does FEA feel that there should be delay until after the Coastal Plan is completed?
>
> Mr. LIGON. That is the feeling at the present time, yes sir.

Senator TUNNEY. Is that your testimony again, Mr. Ligon?

Mr. LIGON. Yes; it is my testimony today. As I indicated in California, Senator Tunney, I think it is very important that the Coastal Zone Commission should be able to make its recommendations if it is at all physically possible to do so within the time limits.

Senator TUNNEY. I do not recall that in answer to the question in California, you put a proviso in there, "if it is possible to do so."

Mr. LIGON. I did not mean to put a proviso in today. I think it is very important that the input of the Coastal Zone Commission should be included with the testimony that we have had in California with your committee as well as the Project Independence hearings. In addition, any input that the Department of Interior receives from people who are willing to come forward and testify on the Environmental Impact Statement hearings will be considered.

I just think it is very important that the decisionmaking process be very flexible and open and allow all groups to have the opportunity to comment.

Senator TUNNEY. Mr. Carter, when you go ahead with planning a 10 million acre leasing schedule involving several new virgin areas, how are you going to know which areas are the safest and do you care?

Mr. CARTER. Well, we certainly care. We have available an excellent study on the available information at that time by CEQ, where they ranked various of the frontier areas.

We also have available the response to a request that our Department made in February of 1974 asking industry, States and the public to rank the various frontier areas in accordance with the resource potential and to list the various environmental problems that they might have in development.

In addition to that we have our own information that has been obtained over the years on all of these resource areas pointing to the resource potential in the various areas. We have a considerable amount of expertise, in the Geological Survey, the Bureau of Land Management and in the Sports Fishery Bureau to tell us about environmental factors.

So with that information, we can make a rough balance of environmental risks versus resource potential and look to the probable time of development and the cost of development involved.

So you can make a determination of where, in the national interest, you ought to try to encourage development if you want to produce some oil and gas. And we think we have enough information to make those kinds of gross assessments. It is only after those are made, that you schedule an area, that you can get the kinds of detailed studies necessary to answer the next series of questions.

Senator STEVENS. Would you yield there?

Senator TUNNEY. Yes.

Senator STEVENS. That is one thing that worries me, coming from my State. My colleague points out that he represents 21 million people. I represent 370 thousand, and the greatest problem pointed out by CEQ and NSF as I understand it, is in Alaska.

I am rather afraid that what we are hearing is the protests of the more populous areas that is going to force you to go into the higher risk areas because of the politics of the situation and I certainly hope that does not occur. Still I think I see the handwriting on the wall as far as what is happening and I think we in Alaska are going to have to take a good long look at this because as I said in California they get nearly all of our oil.

If they are unwilling to take the risk of drilling off their own shores why should we take the higher risk of drilling off our shores?

I hope that the net result of these hearings is not to force you into the decision to lease Alaska because even though the risk is higher, the political clout may be less.

Senator KENNEDY. No one underestimates your political clout, Senator Stevens.

Senator STEVENS. I think I will be around for at least 4 more years. So I will be an awful thorn in your side if you make that decision.

Mr. CARTER. It is the great resource potential, Senator Stevens, that leads us to want to see if the environmental risks that the CEQ pointed to can be overcome. Certainly if a more detailed study were to indicate that they cannot, there would be no lease on that area.

Senator STEVENS. We are relying on that judgment. Thank you.

Senator TUNNEY. What I would like to know, Mr. Carter, is that with respect to southern California, and the leasing program there, how will it be possible to evaluate the impact upon the onshore population of 10 million people until such time as the coastal management plan of the State has been completed?

Mr. CARTER. I do not know entirely, because the coastal management plan obviously could produce decisions that would totally undermine any of the assumptions on which a person may now project probable onshore development.

So, obviously you can never, as a Federal agency, predict the onshore impact of offshore development, because the onshore impact is something that the State and local governments have jurisdiction over, and over which we do not have jurisdiction.

But it is certainly possible to provide a basis on which very reasonable projections can be made. You can look at where the oil facilities in southern California are now and you can assume that as an economic matter, probably those facilities, and not new facilities, will be

utilized for treating and processing any oil that should be produced in an offshore sale and probably just backing out oil that now comes in there by tanker.

But another thing, and one that I am very hopeful we can accomplish, Senator, is that we can comment on the State's coastal zone planning; and I have done that so far. I have tried to get from the State Coastal Zone Commission all of their draft plans. I have asked the department to prepare detailed comments on those plans, and I have forwarded them to the committee.

Another thing we can do is get members of the commission to participate with us in the preparation of our environmental impact statement without any commitment to any conclusions that we might make and we have written to the commission, to the Lands Commission of the State, we have written to Mayor Bradley and we have written to Orange County and to a couple of environmental organizations in southern California and asked them to participate in a very meaningful way in the drafting of our environmental impact statement. We want to have a maximum possible impact from the public and from official groups in California so that our projections of probable impact will be as accurate as they possibly can be.

Senator TUNNEY. But is it not true that the State's coastal management plan is going to be a determinant in the ability to produce oil offshore and that any decision on the leasing of that offshore oil therefore should wait until such time as the State's coastal management plan has been completed?

Mr. CARTER. I would not share that conclusion. The State's management plan, I would not want to predict when it will be completed. You are certainly more expert than I in California, but a report is not due until I believe the first of next year.

Senator TUNNEY. The end of 1975?

Mr. CARTER. Well, at the end of 1975 it will then be subject to action by the legislature before you have a plan and if the action by the legislature follows the pattern of the action by most legislatures they are not going to just accept without careful study the proposal of a nonlegislative body producing something as important as a coastal zone management plan.

And that plan has in it elements that go far beyond just energy, so I would guess that it would be some time, maybe even in years, before you have a finally approved California plan. I do not believe that we should await completion of that plan before making a decision whether or not to hold any lease sales off California.

The Nation needs the oil. There is a serious national problem with our supply-demand situation in energy and if we were to await development of plans by every agency that has a legitimate interst and authority to legislate that could affect energy development, we would be stymied for a long number of years.

It is a tough problem and one that I hope we can work through by exchanging information and working together as we go along.

But, I would hate, Senator, to give a veto to every group that could have a legitimate interest in this area.

Senator TUNNEY. Well, part of the problem is that the administration has opposed full funding for the State coastal management studies and plans and this past year there was only $9 million available which was less than authorized, substantially.

You had a congressional action, Senate action, under the Special Energy Research and Development Act in which the Senate made $19 million available, and this $19 million was to take out of mothballs three research vessels which NOAA would use for helping develop the State environmental baseline studies.

The administration opposed that $19 million and as a result that was cut back to I think $7 million, the amount that could be used for those purposes.

So here we have a situation where on the one hand the Department of the Interior is telling us,

> We want to do everything we can to cooperate with the States and help them with their baseline studies and to have their baseline studies available so that we can use it in our Environmental Impact Statement, and we want to be sure that we take into consideration the States' Coastal Management Plans and have that input as we develop our leasing schedule.

On the other hand, the other side of the Government is opposing full funding for the assistance that the Federal Government should be giving to the States to help them develop their coastal management studies, and as I just indicated opposed the full funding of $19 million to take out of mothballs those research vessels that would help the baseline studies, environmental baseline studies.

And I for the life of me cannot understand why it is that if the Interior Department is so interested and the administration is so interested in having the States' input, you oppose Federal cooperation and funding to help the States make these decisions which would assist you.

What effort is the Department of Interior making to get full funding for the State coastal management plans?.

Mr. CARTER. We are certainly studying with people in NOAA the appropriate level for establishing a method of cooperation involving NOAA, ourselves and the States along the lines that I explained to you.

I share your view that the States certainly ought to participate fully here. I do not know how many of them the existing Federal program would provide funds for because under the Coastal Zone Management Act, if I correctly understand it, the Federal contribution goes to the establishment of a mechanism for decisionmaking. It does not go for the actual development of the detailed plans, and that some money has already been given to the establishment of planning mechanisms in the coastal States.

I personally would think that in a place where a new lease sale is contemplated, they have got a new kind of problem. It is probably not the kind of problem that the existing funding structure was designed to deal with and I would hope that——

Senator TUNNEY. Well, I just would say that it is my understanding that Mr. Knecht is in the room.

Mr. KNECHT. Yes, I am here.

Senator TUNNEY. Could you just explain your position, Mr. Knecht, and what the purpose of the funds are?

Mr. KNECHT. Well, Mr. Tunney, as Mr. Carter mentioned, we have had discussions and I hope they can continue.

Senator TUNNEY. Could you just explain for the record your status?

Mr. KNECHT. Yes. I am Director of the Coastal Zone Management Program in NOAA. We have had discussions with the Interior Department with regard to the role of the coastal states and the Federal Government in offshore leasing.

With regard to the use of the Federal funds that are available under the Coastal Zone Management Act, Mr. Carter is correct that the Federal review of proposed state coastal zone programs is review of adequacy of process.

Nonetheless, these Federal grant funds are joined by State funds on a two-thirds one-third basis to develop not only the process but the plan that a State would implement. The Federal Government would not review the detailed land use decisions going into the plan, but rather the adequacy of the process used to develop the plan.

Senator TUNNEY. Thank you. Well, I have a number of other questions but the chairman indicates that there are other witnesses which we have to call and I certainly do not want to delay the committee's business.

I just would like to suggest however, before you leave, Mr. Carter, that one of the reasons that you have run into the kinds of difficulties that you have run into with State and local governments is because of the feeling that the Department of the Interior is highhanded in its approach to this leasing problem and that the decision has already been made by the Federal Government to go ahead with these leases, irrespective of what the State and local governments feel about it, irrespective of the kind of infra-structure that is going to be built up onshore to handle the oil that is coming in from the offshore. There is a sense that the reason for this is that the Department of the Interior, working with OMB, wants the bonus bid money to help balance the budget and is much more concerned about that than they are concerned about the quality of life and the people that live in in the areas adjacent to where the oil is going to be drilled.

And I would just hope that the flurry of interest and activity that occurred as a result of the publication of this internal memorandum, would make it clear to the Department that there are many of us who have not excluded the possibility of developing offshore areas who are deeply concerned that you are not going to take into full consideration Coastal Management Plans of the States, the environmental problems of the States and the coastal areas in making a decision as to whether or not to lease.

And I recognize a lot of money can come into the Treasury Department as a result of these bonus bids but I also am cognizant of the fact that the Federal Government has very little idea of what the potential is out in the Outer Continental Shelf for oil development, and if we were going to truly protect the public's interests in those oil lands we ought to have a far better understanding of what the value of those resources are before we sell the public's interest in that oil.

Thank you very much, Mr. Chairman.

Senator KENNEDY. Do you want to submit any of the questions to him?

Senator TUNNEY. Yes. I would like to submit several of the questions for the record.

[The questions referred to, responses, and material follow:]

44-827 O - 75 - 9

U.S. DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
Washington, D.C., November 22, 1974.

Hon. JOHN V. TUNNEY,
U.S. Senate,
Washington, D.C.

DEAR SENATOR TUNNEY: Enclosed are the answers to the questions posed in your letter of October 7, 1974, following my appearance before the Administrative Practice and Procedure Subcommittee.

I am also enclosing for your information some of the material given to the coastal state governors and their representatives including a statement on the Department's leasing and lease supervision procedures, a letter from Secretary Morton to Chairman Peterson of CEQ regarding the Department's actions to adopt the recommendation in CEQ's report on OCS oil and gas development, and the Department's proposed leasing schedule.

Sincerely,

JARED G. CARTER,
Deputy Under Secretary.

Enclosures.

Question 1. Please describe the circumstances wherein the decision was originally made to increase OCS leasing to a level of ten million acres per year starting in 1975. Please include specific information on which government officials were involved in making that decision or recommending it to the President. Were there dissenting voices?

Answer. At the close of 1973, this country faced an Arab oil embargo and extraordinary price increases in the world oil market. With the President's energy message in preparation, each agency was asked what it could contribute to resolution of our obvious energy problems.

Interior had already initiated an accelerated leasing program for the Outer Continental Shelf, with an objective of leasing three million acres per year. Concerned members of the Secretariat, the BLM and USGS discussed the question whether we could and should move faster in providing an opportunity for developing the country's single most important source of future oil and gas production. There was no ready consensus on the appropriate pace of OCS leasing. The Secretary and Under Secretary weighed the arguments and came down on the side of those who felt we should move faster, and this position was indicated on January 23 in the President's Energy Message.

Question 2. On what basis was the figure of ten million acres chosen? What estimate did the Interior Department have in 1973 of how much oil could be produced, in what time frame, and with what revenues to the Treasury, from a ten million acre program?

Answer. Let me state as clearly as possible my understanding of what was decided last January. Given our obvious vulnerability to the concerted efforts of the OPEC oil cartel, the President made clear his interest in achieving maximum domestic production of oil and gas as soon as possible.

With no expectation of major new finds onshore in the lower 48 states, increased domestic production meant looking to the OCS and the Arctic. To get maximum production from the OCS over the next 10 to 15 years, we would have to offer an opportunity for development of the best prospects as soon as possible.

Both Interior and industry have some notion of where the best prospects lie in the OCS. However, there is a good deal of uncertainty until substantial drilling has been done. Inevitably, there is some risk that the best prospects will be left undiscovered and undeveloped and that some promising formations will fail to produce oil or gas.

This risk can be either aggravated or decreased by Interior's approach to leasing. Leasing minimal acreage each year over an extended period of time certainly delays exploration and development and increases the probability that the best prospects will never be found. On the other hand, providing an opportunity for exploration in each major region of the OCS as soon as possible increases the probability that the best prospects will be found and production brought on line soon enough to have a substantial impact on our reliance on imports over the next 5 to 15 years.

Basically, these are the decisions we made last January. We did not decide that ten million acres per year was the single best rate for leasing on the OCS. For better or for worse, it was selected as a target to publicly project our decisions to generate some momentum in the accelerated leasing effort.

Question 3. In the 18 months since the ten million acre program was announced, a number of new studies and projections of environmental hazard, and resource potential, have been made, Also, economic conditions have changed considerably. Have any of these new facts changed the Department's contention that ten million acres per year is the optimum leasing program?

Answer. The ten million acre program was announced only last January. Since then, Geological Survey has adjusted their OCS reserve estimate downward. In addition, CEQ published its analysis of the comparative environmental risks of development in the frontier areas.

Using the most recent data available, we did a staff analysis of development in the Gulf of Alaska, Baltimore Canyon, Georges Bank and Santa Barbara. In each case, development of the best one-million acres appeared to be profitable even at prices well below current world market levels.

The Project Independence Blueprint will also have estimates of production from the OCS. At price levels comparable to those we have today and with development started in all OCS regions, preliminary production estimates are in the area of 3.5 million barrels per day by 1985.

Overall, I think the facts, as well as logic, support a policy of accelerated leasing on the OCS.

Question 4. How is this decision to lease ten million acres per year, already made and in the process of being implemented, going to fit in with the, as yet, incomplete Project Independence blueprint of the Federal Energy Administration? Isn't the Interior Department prejudging long-term energy decisions by not waiting until Project Independence plans are drawn up until a massive increase in offshore drilling is undertaken?

Answer. The ten million acres proposed for leasing in 1975 has been considered in the preparation of the Federal Energy Administration's Project Independence Blueprint. No leasing decisions for 1975 will be made until the blueprint study is completed with the possible exception of the first sale on the lease schedule for 1975. We cannot prepare for other 1975 sales without considerable preliminary work that must be started before the entire blueprint effort is completed. On the other hand, if the blueprint unexpectedly indicates other potential energy sources that are as acceptable as increased OCS leasing—from environmental, economic and timing points of view—we can switch priorities at that time.

Question 5. What specific assurances can you give that financial resources are available to allow the proposed level of leasing in the next few years, and that there will be enough equipment and trained personnel to carry out necessary offshore drilling in the new lease sites?

Answer. We cannot give assurances on these points because we do not control the elements that enter into all the underlying decisions. However, we can assure that no leases will be sold for less than their fair market value; and we believe that the lessees interest and the economy generally indicate that all leases purchased will be developed in a timely manner.

Present supply difficulties in OCS equipment stem largely from steel shortages that developed under price controls, which caused the steel industry to cut production of low profit items such as tubular goods. Eliminating price controls has helped and will continue to help correct this problem. The broad outlook for equipment availability over the next five to six years is favorable.

Delays in OCS leasing in 1971 and 1972 caused oil company interest to shift to foreign offshore areas. Industry representatives indicate that with a dependable, accelerated leasing program, including attractive prospects in frontier areas, they will either keep newly constructed rigs here or return U.S. registered rigs from overseas. They guess that ten percent or more of the rigs estimated for foreign operations could be available for OCS drilling. Using the ten percent figure, 26 rigs would be added to the U.S. rig count, making a total of 126.

Although skilled labor supply is somewhat restricted at the present time, it is expected that higher wages will accompany expanded OCS leasing and help attract the needed skilled manpower.

The capital position of OCS participants, both majors and independents, is excellent. In 1973, the oil industry accumulated unprecedented profits. This year's outlook is just as promising. In addition, innovative financial arrangements have made available large amounts of capital from the petrochemical industry, large petroleum consumers such as utilities, insurance companies, and pipeliue and distribution companies.

Question 6. Based on your knowledge today, what estimate do you have of the amount of oil and gas which can be produced from a ten million acre leasing program, and in what time frame?

Answer. The proposed ten million acre leasing program includes some completely untested frontier regions. For this reason, any estimates of undiscovered recoverable resources are, by their very nature extemely speculative. General estimates may range up to 20 billion barrels of oil (includes natural gas liquids) and 100 trillion cubic feet of gas. As stated earlier, preliminary production estimates are approximately 3.5 million barrels per day by 1985.

Question 7. You stated in the hearings this morning that several fundamental policy questions were unresolved within the Interior Department regarding the ten million acre leasing program, including whether it is feasible at all, and what frontier areas should be leased. What assurance can you give that these policy questions can be resolved rationally now that the Under Secretary has made a decision to plan on a large leasing program in all frontier areas? What opportunity will there be for people inside or outside the Interior Department to challenge the wisdom of the overall level of leasing and the leasing of certain frontier areas as opposed to others? I raise this question because under your proposed plans, each lease site will be evaluated individually, and I do not see what opportunity there will be for the various proposed lease areas to be compared and judged on a relative basis as to environmental hazard in particular.

Answer. To put the Under Secretary's decision in the proper perspective, you have to take note of the entire policymaking process involved in OCS lease sales after general areas for future lease sales have been selected and generally arranged on the basis of a priority reflecting a balance between resource potential and environmental considerations. The basic steps are as follow: baseline studies to establish a benchmark on environmental conditions against which comparisons can be made in the monitoring process that would follow actual sale of any lease in the area; call for industry tract nominations; receipt and assessment of industry nominations; tract selection and public announcement of the prospective sale; draft environmental impact statement; public hearings on the draft environmental impact statement; final environmental impact statement and review by CEQ; publication of sale notice; final pre-sale evaluation to estimate individual tract values; sale; and post-sale evaluation and bid acceptance or rejection.

In frontier areas, this whole process can take up to two years. If we are to have the option of holding lease sales in any given year, a multi-year schedule of prospective sales is needed to organize necessary staff work and get the policy-making process moving.

We cannot and have not decided at this time that, for example, on October 14, 1978, we will hold a 4.7 million acre sale on tracts A–Z in the Bering Sea. We can and are now in the process of deciding whether or not we want to have the option of holding such a sale. The process is long and arduous, with many opportunities along the way to scrub a sale. We feel this is as it should be and have no intention of taking any short cuts.

As for the comparative environmental hazards involved in developing the various OCS areas, we are taking this aspect into consideration in putting together a schedule of prospective sales. However, the final decision on whether or not to hold a sale does not and should not depend upon the relative hazards among areas, but rather on the trade-off between resource potential and environmental risk in a given area. In final analysis, safe operation on the OCS must depend on proper assessment of risks and effective stipulations and regulations for coping with them.

The opportunity for comparison of various proposed lease areas is provided by the recently released draft programmatic impact statement on the proposed ten million acre leasing program. This statement includes information pertaining to resource potential, environmental conditions, hazards, land use, etc., on all of the individual regions of the OCS. A copy of this environmental statement is attached (Attachment number 1).

Question 8. What is the status and time frame for the environmental impact study of the ten million acre leasing plan? Will this E.I.S. make an attempt to rank potential lease sites around the OCS in order of environmental hazard? If not, why not, and what steps would you have to take in order to be able to make such a ranking?

Answer. The draft EIS on the proposed leasing increase was filed with the CEQ and made available for public review on October 18, 1974. Public hearings are planned for the week of November 18 in Trenton, New Jersey; Los Angeles, California, and Anchorage, Alaska. Details on these hearings are attached (Attachment number 2). The draft statement includes the ranking of potential leasing areas contained in recent CEQ reports and the summary rankings of OCS

areas resulting from the Department's request for such rankings made in February 1974. A copy of the responses received in reply to the Department's request is attached (Attachment number 3). In addition, the EIS contains environmental and resource data to enable the Department to make decisions as to what areas should be proposed for leasing and in what order. After comments on this EIS have been reviewed, a final EIS will be prepared and filed with the CEQ early next year.

Question No. 9. If no leasing schedule had yet been made on a ten million acre program, what is the environmental impact study covering? Will you make an EIS on the schedule you will produce? On frontier acres generally?

Answer. The draft EIS on the proposed leasing increase covers all OCS areas of the United States. This statement along with other resource and economic information will be considered by the Department in any schedule that is proposed. Subsequent environmental statements will be prepared on leasing areas proposed for further and much more detailed study prior to any decision to lease.

Question No. 10. You told Senator Kennedy this morning, in response to his question about whether oil from the George's Bank would be used in New England, that OCS oil was destined for use in the adjacent coastal areas. You said that, in effect, the coastal states had a choice between offshore drilling or more tanker traffic. It is not true that Interior Department plans are not based on regional or local resource needs, but on getting the most oil out? If this were not true, would there not be a damper on offshore activity in southern California since Alaskan oil will provide more than enough energy for the West Coast starting in 1977?

Answer. I did not tell Senator Kennedy that OCS oil is destined for use in adjacent coastal areas. I said, I thought it would be used in adjacent areas because this would make good economic sense for all parties concerned.

The leasing schedule is developed by consideration of both regional and national energy needs and by identification of future supply-demand imbalances. However, national energy needs now predominate in our planning considerations.

By 1982, the throughput of the Trans-Alaska Pipeline is likely to be at a full capacity of 2 million barrels a day. Crude oil demand in 1973 in District V (the west coast, Alaska, and Hawaii) was 2.3 million barrels a day, and has been projected to be from 2.9 to 3.4 million barrels a day by 1982. California, by far the largest petroleum producer in the District V, now produces .9 million barrels a day of the total 1.1 million barrels a day District V production. However, onshore California production has peaked and is now declining.

The effects of conservation measures, increased price levels and of increased production in other areas of Alaska and in California may well result in an oversupply of domestic crude in southern California by 1980–85. We hope this happens because the Nation needs the oil very badly.

Question 11. Why was a decision made at the highest political levels of the Interior Department to seek to lease all frontier areas as quickly as possible? How can such a decision possibly be consistent with the goals of the Coastal Zone Management Act, which are only now being slowly implemented, in the face of Administration indifference, in most of the coastal states near these frontier areas? What geological expertise does Under Secretary Whitaker have to say that it is environmentally safe to consider leasing in all frontier areas at once?

Answer. As stated above, providing an opportunity for development in each major region of the OCS, including frontier areas, as soon as possible increases the probability that the best prospects will be found and developed within a time frame designed to reduce the reliance of the United States on foreign sources of oil. It is the Department's opinion at this time that accelerated offshore leasing remains compatible with coastal zone management. Until oil is actually found and its volume accurately estimated, detailed development plans for onshore are not possible.

It is anticipated that the normal time delay of three to eight years between initiation of exploration after a lease sale and the development to fullproduction will allow ample opportunity for state and local governments to include consideration of the siting and impact of onshore support facilities in their coastal management programs.

The environmental impacts of proposed OCS leasing are carefully considered before any leases are issued. Pre-sale assessment of environmental risks is made for each sale through the Environmental Impact Statements prepared by the Bureau of Land Management. In addition, a draft Environmental Impact Statement assessing the ten million acres in 1975 has been released for public comment.

Question 12. Under already-publicized leasing plans for 1975, you said that three lease sales were under way: two in the Gulf of Mexico and one in southern California. How many acres are you expecting to lease in these three areas, given a favorable environmental study and normal experience in lease sales?

Answer. In sale #37, tentatively scheduled for January 1975, about 3 million acres offshore Texas will be offered. In sale #38, about 2.9 million acres in the central Gulf of Mexico will be offered. In sale #35, about 1.5 million acres offshore southern California will be offered.

For the five sales held in 1973 and 1974 (excluding the most recent sale), 78%, 59%, 45%, 42%, and 8% (this sale comprised tracts which had been offered but not leased in previous sales) of the acreage offered was leased. For the sale held on October 16, 1974, 52% of the acreage offered on a cash bonus basis was bid on and 8 of the 10 tracts offered on a royalty bid basis were bid on. For this sale, 46% of the acreage offered on a cash bonus basis had been leased. A decision on the royalty tract is pending. Based on normal experience, we expect to lease a minimum of 40% to 50% of the acreage offered in the upcoming sales.

Question 13. When do you intend to comply with the directive of the House Appropriations Committee to justify any leasing program for 1975 which is greater than three million acres?

Answer. On October 8, and 10, 1974, Under Secretary Whitaker and I appeared before the House Appropriations Committee to justify the leasing program for 1975.

Question 14. For each of the eight specific factual areas in which the Appropriations Committee will require justification, please tell me what information you now have, or are in the process of getting, which will allow you to answer the questions raised. When will this information be available for all eight subjects?

Answer. For the Department's discussion of the eight factual areas specified by the House Appropriations Committee, please refer to Attachment #4.

Question 15. As you know, the Senate passed the Energy Supply Act by a very large margin two weeks ago. This Act contained a number of policy directives concerning OCS leasing and management. Is the Interior Department planning to implement any of these policies now that the Senate has passed on them? I would point out specifically that a considerable emphasis has been placed in the legislation on coordination with coastal zone management goals and State and local government.

Answer. The Department of the Interior already is working to implement some of the suggestions outlined by the Energy Supply Act of 1974. For example, as stated in question 17, close coordination will be initiated with coastal zone agencies during the leasing procedures. Environmental baseline studies have been contracted for the eastern Gulf of Mexico and the northeastern Gulf of Alaska. Additional studies will be initiated this fiscal year in the Mid-Atlantic, southern California, and Gulf of Mexico. We are working with Bob White of NOAA and his Coastal Zone Management Office to coordinate our efforts to assure that we work closely with State and local coastal zone planners in our decisionmaking processes.

Question 16. What steps are you taking to implement another policy stated in this legislation, that the safest offshore areas should be leased first, where possible?

Answer. The Department has been and will continue to initiate leasing in the least environmentally hazardous areas first where those areas also hold great promise for producing large quantities of oil and gas. However, to forego offering of frontier areas of the OCS until all environmentally "safe" areas are leased may seriously hinder the ability of this Nation to increase its domestic supply of oil and gas. Therefore, untested areas may be included in leasing plans with, of course, careful analysis and consideration of environmental risks and impact.

Question No. 17. How are you moving to assure that state coastal zone planning is really incorporated into Interior Department planning and decisionmaking? I do not consider it sufficient for you to say that the Department will listen politely to a presentation in a hearing which occurs after potential lease sites have been picked out and a draft environmental impact statement has, in many cases, already all but decided the issue.

Answer. Liaison is being established with NOAA's office of Coastal Zone Management. In addition, we will attempt to institute close coordination with coastal zone management agencies from affected states during upcoming lease sales. This will include invitations to these agencies to designate representatives to work with our OCS field offices in appropriate phases of the leasing procedure. As you know, we have tried to establish such an arrangement in California.

Question No. 18. Once again, I ask whether the Department will hold off leasing decisions in southern California until enough progress has been made on the Coastal Zone Plan to assure that there will be no conflicts between the two?

Answer. As stated by the Secretary, final decision on whether or not to hold a lease sale offshore southern California will not be made until summer 1975. Meanwhile, the leasing procedure will continue. As stated above, we feel that the timetables of OCS leasing program and those of the coastal zone programs are compatible. We want to work closely with the coastal zone people in California not only in our decisionmaking processes, but also, in their preparation of a coastal zone plan for energy.

Question No. 19. In the history of OCS lease sales, has the Department of Interior ever gone through the stages of call for nominations, and (in the period since NEPA) environmental study and then decided not to offer any leases in a particular area? Have there been cases where the Department offered leases, but none were bid on?

Answer. In 1968, nominations were received on OCS lands in the Gulf of Alaska. The sale, which was tentatively scheduled to be held in December 1969, was postponed when the Secretary of the Interior declared a moratorium on all lease sales after the Santa-Barbara oil spill. Because it is virgin territory, the area has not yet been offered for lease so that further data may be collected and analyzed. There have been cases where individual tracts were withdrawn from a sale for environmental reasons, and often we refuse to offer tracts that are nominated by industry because we think they have insufficient resource potential. There have been no cases where the Department has offered tracts for lease and the total area offered was not bid on; however, there have been tracts offered as part of a sale that were not bid on. For example, in the October 16, 1974 sale, 297 tracts were offered and 157 tracts received bids.

U.S. Department of the Interior,
Bureau of Land Management,
Washington, D.C.

Proposed Increase to Ten Million Acres for Oil and Gas Leasing on the Outer Continental Shelf

(General Information Regarding Conduct and Procedures of Hearings and Rescheduling of Hearings)

LOCATIONS

Hearings have been rescheduled to allow more time for review of the draft environmental impact statement. Times and dates are given below. The hearings will be held in the following cities: Trenton, New Jersey; Los Angeles County, California, and Anchorage, Alaska. Physical locations are as follows:

Trenton.—Holiday Inn, 240 West State Street, Trenton, New Jersey 08608. Phone: (609)989–7100. Capacity: 350–400.

Los Angeles County.—Santa Monica Civic Auditorium—East Wing, 1855 Main Street, Santa Monica, California 90401. Phone: (213)393–9962. Capacity: 400–600.

Anchorage.—Captain Cook Hotel, Fifth and K. Streets, Anchorage, Alaska 99501. Capacity: 350–400.

TIMES AND DATES

All hearings will begin promptly at 9:00 a.m. local time on the scheduled days. Two days have been allotted for each hearing, but every effort will be made to receive as much testimony as possible on the first day. Dates are as follows:

Los Angeles County—December 2 and 3 (Monday, Tuesday).

Anchorage, Alaska—December 4 and 5 (Wednesday, Thursday).

Trenton, New Jersey—December 11 and 12 (Wednesday, Thursday).

Time Limitations for Oral Statements

Those making oral statements are to limit their remarks to 10 minutes or less unless advance permission to make a longer statement has been requested and granted by the presiding officer prior to the commencement of the hearing.

AUTHORITY

The hearings are being held pursuant to the Outer Continental Shelf Lands Act (67 Stat. 462; 43 U.S.C. 1331 et seq.), the implementing regulations, particularly

43 CFR 3301.4 and the objectives of the National Environmental Policy Act of 1969 (PL 91–190; 83 Stat. 852, 853).

PURPOSE

The hearings are for the purpose of receiving views, comments and suggestions relating to a possible increase to 10 million acres for oil and gas leasing of submerged lands on the OCS. The hearings will provide the Department with the opportunity to receive comments from public and private sectors in order to fully evaluate the potential effects of such leasing on the total environment, domestic supply of the mineral resources, aquatic resources, aesthetics, recreation, and other resources in affected areas during the development and operational phases of the proposed leasing program.

They will also provide the additional opportunity to receive comments and views from State and local agencies authorized to develop and enforce environmental standards as to the environmental impact of proceeding with such a program.

DRAFT ENVIRONMENTAL STATEMENT

The Bureau of Land Management has prepared a draft environmental statement that considers in detail the potential environmental impact of the possible accelerated leasing action. This statement is available for public review in the following offices: Office of the Manager, Gulf of Mexico Outer Continental Shelf Office, Bureau of Land Management, 1001 Howard Avenue, Suite 3200, New Orleans, La. 70113; Office of the Manager, Pacific Outer Continental Shelf Office, Bureau of Land Management, 7663 Federal Building, 300 North Los Angeles Street, Los Angeles, Calif. 90112; Atlantic Outer Continental Shelf Office, 90 Church Street, New York, N.Y. 10007; Office of the Manager, Alaska Outer Continental Shelf Office, Box 1159, Anchorage, Alaska 99510, and in the Office of Public Affairs, Bureau of Land Management (130), Washington, D.C. 20240. Single copies are also available from the same offices.

COMPOSITION OF HEARING PANEL

Each of the public hearing proceedings will be conducted by a Departmental Administrative Law Judge. Each Administrative Law Judge will be accompanied by appropriate Departmental officials.

ORAL STATEMENTS

Those wishing to present oral statements at the hearings are requested to fill out the enclosed registration card to the fullest extent possible, and return it before 4:15 p.m. November 22, 1974, to the Director (732), Bureau of Land Management, Department of the Interior, Washington, D.C. 20240.

Time preferences for presentation of oral statements will be honored whenever possible. A tentative listing of speakers, in the order they will be called, will be prepared and available at the respective hearing locations, immediately prior to the commencement of each hearing.

GENERAL

The Department wishes to develop all views on the five specific points that are contained in Section 102(2)(C) of the National Environmental Policy Act of 1969, and specifically under (3), comments and additional data regarding the feasibility and environmental impact of the energy sources discussed in the statement.

1. The environmental impact of the proposed action.
2. Any adverse environmental effects which cannot be avoided should the proposal be implemented.
3. Alternatives to the proposed action.
4. The relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity.
5. Any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

In addition, the Department has identified general issues that it would like to see fully developed at the hearings. They are: (a) domestic and commercial need for the resource, (b) environmental and conservation consideration, (c) industry interest in the proposal, (d) possible conflicts between user groups, (e) geologic conditions as they affect safety and protection from environmental

pollution, and (f) economic benefits from oil and gas development to the national and regional economies. Most of these issues are discussed in the draft environmental statement.

All who wish to testify are invited to concisely express their views on any aspect of the possible leasing acceleration.

At the conclusion of the presentation by each witness, members of the hearing panel may ask the witness questions intended to clarify or otherwise develop points that were contained in the testimony. Only members of the hearing panel may ask questions of witnesses. Questions asked by members of the hearing panel should not, in any event, be construed as indicative of a predetermined Government position.

Oral statements may be supplemented by a written statement submitted at the hearing or until December 27, 1974.

In order to afford the interested public maximum opportunity to participate in the offering of oral testimony, organizations are encouraged to have only one spokesman present oral testimony at the hearing. However, multiple member organizations, whether proponents or opponents of the proposed action, may obtain advance permission to offer more than one spokesman or witness at the hearing upon making a clear showing that the hearing panel will benefit by this type of presentation and that it will avoid lengthy statements by their separate members of the organization.

WRITTEN STATEMENTS

Written statements from those unable to attend the hearing should be addressed to the Director (732), Bureau of Land Management, Washington, D.C. 20240. Written statements will be accepted until December 27, 1974. Written statements will be given the same weight as oral statements made at the hearing.

STATE AND LOCAL AGENCIES

Comments from State and local agencies authorized to develop and enforce environmental standards are requested to be submitted at the hearings in writing even though they are to be presented orally. In addition to the issues identified above, they should consider the aforementioned five specific points that are mentioned in Section 102(2)(C) of the National Environmental Policy Act.

HEARING REGISTRATION CARD

Date_____
Name and Title of Person Speaking:_____
_____
Address:_____
Company, Group, Association Represented:_____
_____
City Preference: Trenton_____Los Angeles_____Anchorage_____
Time and Date Preference_____A.M._____P.M._____
Card Submitted By:_____

NOTE: Witnesses are encouraged to keep their oral testimony concise and addressed to their specific points of interest in the proceedings.

Witnesses are allowed until December 27, 1974, following the hearing to submit written statements which amplify their position. Such written statements may include materials of testimony by others at the hearing.

DEPARTMENT OF THE INTERIOR, U.S. GEOLOGICAL SURVEY/BUREAU OF LAND MANAGEMENT, OCS ACCELERATED LEASING PROGRAM, HOUSE SUBCOMMITTEE REQUIREMENTS

Subject: OCS Leasing—10 Million Acres: Appearance before the House Subcommittee on Appropriations to justify the leasing of additional acreage in excess of three million acre tracts. (Reference House Report 93–1209 to accompany H.R. 16027)

Background:

COMMITTEE STATEMENT

Outer Continental Shelf leasing

The Committee held extensive hearings on numerous budget proposals relating to the proposed accelerated oil and gas leasing program on the Outer Continental

Shelf. The Administration has proposed, as a part of Project Independence, to go from a current program of about three million acres leased in calendar year 1974 to a target program of ten million acres leased in calendar year 1975.

The Committee supports the objective of greater self-sufficiency in energy. However, the Committee has grave reservations about the practical aspects of such a vastly accelerated OCS leasing program in one year. The Committee believes that several ramifications of the effort to achieve this goal indicates that the public interest may be sacrificed.

In summary, the Committee believes that a "target of leasing ten million acres" may be a reasonable one. However, the Committee emphatically believes that this objective should be treated for what it actually is—a goal. In the pursuit of this goal, the United States must not sacrifice the public interest, for these are resoures that belong to all the people, and all of the people are entitled to protection and consultation in their disposition.

The Committee has not made substantial reductions in the budget requests that relate to the proposed ten million acre leasing program. With the funds provided, the Department should pursue its stated objective and prepare for a sound leasing program. The Committee directs the Department to appear expeditiously before the Committee and justify the leasing of additional acreage before further calls are made for nominations of tracts which would lead to leasing in excess of three million acres.

Action: The Committee is concerned with the following:

1. For leased lands there must be assurances that there is expeditious exploration and development.

COMMITTEE COMMENT

The Committee does not want the United States to find itself in a situation, similar to the previous coal leasing program, where millions of acres are leased to companies which defer development on them in order to reap greater profits from future price increases. The Committee understands that OCS leasing is under a different law than coal leasing, but the Committee is concerned that through lease extensions, etc. a similar situation could result.

DEPARTMENTAL COMMENT AND ACTION

There is concern that expanded OCS development will encourage speculation; however, studies by the Geological Survey indicate that this has not occurred to date. To guarantee that future production is not delayed, the Geological Survey is actively monitoring OCS production.

Careful consideration is being given to imposing stricter diligence requirements on OCS leasing; however, two arguments reject this policy: (1) oil and gas pricing have been at a level which make this policy unnecessary and (2) acceleration of OCS leasing will place a strain on the supply of trained personnel and equipment. Under current guidelines, lessees may develop most promising tracts and postpone activity on marginal tracts. Diligence requirements may force development of marginal tracts first which might be counter productive to our goal of maximizing OCS production.

The issue of diligence requirements is under review and a joint report by the Solicitors Office, BLM and Survey will include these questions of (1) the problems created by existing lease terms to developing leases in frontier areas and (2) which lease terms can be changed within the authority of the existing OCS Lands Act to solve the problem.

2. There must be assurances that the environmental impact of proposed OCS leasing actions is carefully and fully assured before the leases are made.

COMMITTEE COMMENT

The Committee understands that this is now a requirement under the Environmental Policy Act. However, the Committee believes that environmental assessments must not be made merely to provide strict compliance with the procedures and the policy established by the Act but also to gain a full understanding of the total impact of these leasing actions. In addition there should be the fullest public participation and dialog so that there is a complete knowledge by the Government and the U.S. public of the consequences of leasing activity or the lack of leasing activity on the relationship between production, consumption and U.S. energy needs.

DEPARTMENTAL COMMENTS AND ACTION

The environmental impacts of proposed OCS leasing are considered before any leases are issued. In addition to information from the two-tier nomination process, BLM requests interested Federal agencies, EPA, NOAA, Survey, Fish and Wildlife Service, to prepare reports describing valuable material resources contained in the area of possible lease sale and the potential effects of mineral operation upon the resources or the total environment. Environmental data is also developed through a baseline study program. All of the data is used to determine which tracts should or should not be included in a proposed offering because of environmental hazards.

Once a tentative list of tracts in a given OCS area is selected and announced to the public, BLM prepares the final environmental impact statement (EIS). Federal agencies and coastal states affected by the proposed action are notified and requested to provide inputs for drafting the EIS.

Multidisciplinary staffs both in the OCS field office and in Washington write the EIS. The impact of the proposed leasing action is analyzed on a tract by tract basis. The draft statement is filed with the CEQ and 30 days later a public hearing is held in the locality where the proposed sale is scheduled to occur. The public is requested to provide comments either orally or in writing on the proposal and its potential impact.

Geological Survey.—maintains a vigorous program of enforcing orders and regulations including a codebook of potential items of non-compliance and enforcement actions which effect OCS leases. Drilling and production inspections are made and reports made on the state of compliance of the lessees.

Legislation.—environmental protection laws are included in the Coastal Zone Management Act, Federal Water Pollution Control Act, Land and Water Conservation Act and the Endangered Species Act.

Environmental Data Gathering Program.—The Department has initiated an environmental research program on the OCS to provide general and specific data needed to ascertain the short and long term effects of the development of offshore oil and gas resources on the surrounding environment.

OCS Research Advisory Board.—to provide advice in the design and implementation of environmental studies related to OCS oil and gas development.

Public Access to Data.—In order to increase the government's and public access to data concerning OCS resources and environmental conditions the Department in May 1974 proposed for comment some new rules regarding the submittal to the government and public disclosure of geological and geophysical data. Availability of this data is expected to improve resource evaluations, to increase awareness of environmental conditions, and to increase competition for certain lease tracts. The Department believes there is basic merit in increasing government and public access to this data to some extent over the existing conditions and that the benefits will exceed the suggested costs. A revised set of proposed "submittal and disclosure" rules presently are being drafted that will take into consideration the comments to the May 16th proposal. These revised proposed rules are expected to be published later in October.

3. There must be assurances that the prices paid for the leases reflect fair market value and a fair return to the United States Government.

COMMITTEE COMMENT

The Committee is concerned that private sector capital might diminish as a result of continuing large sales. In this case, the companies might fail to make bids which reflect the actual worth of the resource and that, with a stated "ten million acre target," bids could be accepted at much less than fair market value in order to attain the target. The Committee believes that it might be a far wiser policy to lease fewer acres in 1975 and extend the program into future years so that fair market values and environmental values may be attained.

DEPARTMENTAL COMMENT AND ACTION

The fair market value of OCS properties is difficult to estimate because of the uncertainty about the actual amount of oil and gas reserves contained in any lease. Given this uncertainty, the fair market value of the lease is derived from oil and gas reserve estimates based upon available geophysical and geologic information about the lease. For any given lease, variations among lease evaluations assigned by different bidders and the Government arise from differences in the interpretation of available information, company bidding philosophy and internal company needs.

Because of these factors there will continue to be wide variations in values assigned to the same lease by different evaluations.

Steps taken by the Department to supplement free market forces include (1) a strong tract and bid evaluation procedure (2) the testing of royalty bidding (3) consideration of banning majors from bidding jointly (4) initiation of a two-tier nomination system and (5) continuous monitoring of availability of capital, equipment and manpower necessary for offshore development.

4. There must be assurances of availability of drilling and pipeline equipment and materials.

COMMITTEE COMMENT

The Committee is also concerned that a lack of availability of materials such as drilling rigs and pipelines, particularly in deep water areas, could serve as a deterrent to the development of OCS leases and that there could be unwarranted lease extensions.

DEPARTMENTAL COMMENTS AND ACTION

OCS Drilling Rigs.—Indications are that with a dependable, accelerated leasing program, including attractive prospects in new frontier areas, a sufficient number of rigs could be available to meet the demands of an accelerated leasing program.

As of June 1974, there were 77 mobile rigs available for drilling in U.S. waters, 19 of which were idle, either available for contract, moving between areas or undergoing major repairs. At the present, 48 drilling rigs are under construction in domestic shipyards.

The National Petroleum Council interim report on rig availability shows that by the end of 1974, an expected 84 rigs will be available for U.S. offshore drilling, 52 of which will be capable of operating in water depths over 100 feet, but only 21 will drill in water over 300 feet. The report forecasts that by the end of 1976, the total U.S. rig count may reach 119 units if all rigs now in U.S. waters will remain and all units now under construction and not committed overseas can be retained in the United States.

Steel Pipe and Other Essential Equipment.—Presently, tubular steel goods are in short supply, however, these shortages should be erased early next year and subsequent supplies will be adequate.

The tight supplies of essential equipment are a direct consequence of the Economic Stabilization Program. Price controls motivated the steel industry to concentrate on producing high profit items while neglecting low profit goods—such as tabular steel products. This present shortage however, does not demonstrate inadequate capacity or inability to keep pace with expanded OCS development. Moreover, as price increases begin to reflect the demand, there will be a positive impact on supply. Thus, despite current difficulties, the outlook for the next five years is good.

Manpower.—Although skilled labor necessary in developing the OCS is somewhat restricted at the present time, there has been an improvement in the past few months. The major problems are the rig and service and supply boat crews. Skilled laborers usually require from 6 to 24 months to train. It is expected that improved wage conditions for skilled laborers will accompany expanded OCS leasing.

5. The acquisition and evaluation of data under studies proposed in the budget pertaining to the level of leasing should be completed before a final decision is made on the level of an expanded offshore leasing program. This would include at a minimum, justification of the proposed leasing level in terms of:

REQUIREMENT

a. The role of offshore oil and gas in a comprehensive energy strategy or plan.

DEPARTMENTAL COMMENT AND ACTION

Cost of OCS Oil Production Compared to Oil Imported.—Unless there are significant increases in domestic production all available projections foresee an increasing amount of foreign oil being imported into the United States even if vigorous conservation measures are enforced. Imports of petroleum in 1973 amounted to 2.264 billion barrels. At current world prices this amounts to nearly $2.233 billion, at the current price of $10/barrel. Initial estimates of transportation and extraction per barrel for OCS frontier oil ranges from $1.50 to $3.50 per barrel.

In addition to oil imports, other energy alternatives have been analyzed. However, despite the possibility of alternative sources, there is no combination that

will relieve us in the near future from our dependency on foreign imports. If we can produce offshore oil and gas at less cost than imported oil, it is essential that we proceed with the acceleration of this program.

b. The availability of drilling rigs, steel pipe, and personnel to support an expanded leasing program.

DEPARTMENTAL COMMENT AND ACTION

(See Para. 4 above.)

c. The availability of capital to make the bonus bids and finance the exploration and development of the leases.

DEPARTMENTAL COMMENT AND ACTION

The capital position of OCS participants is excellent. In 1973 the oil industry accumulated unprecedented profits. In addition to high profits, there exists other evidence of the industrys financial strength in (a) diversification plans of Mobil and Gulf Oil Corporations (b) independent oil companies continually winning increasing percentages of OCS lease sales (c) investment by major non oil producing industries like General Motors in OCS property and (d) innovative financial arrangements by sale of equity interests in OCS leases—partnership ventures by industrial oil and gas consumers, and exploration and production companies.

The oil and gas industry is estimated to spend $7.8 billion in capital investments during 1974. A 42% increase over 1973. It is predicted that 75–80% of the $7.8 billion capital outlay will be directed into exploration increases or production expanding activity.

d. The ability of the Bureau of Land Management and Geological Survey effectively to administer the program.

DEPARTMENTAL COMMENT AND ACTION

Increased manpower and budget support will help the Department execute its management responsibilities. Both BLM and GS, the main agencies within the Department that administer the OCS program, have received additional funding and manpower increases for FY 1975. These increased FY 1975 budget and personnel levels together with the estimated additional needs for resource assessment work in FY 1975 and overall planned levels for FY 1976 will be sufficient to manage an accelerated OCS leasing program.

Fiscal year 1975 funding levels from the BLM and Geological Survey for the accelerated leasing program are as follows:

	Amount
Bureau of Land Management	$18, 585
Geological Survey	25, 464
Total	44, 049

e. The effect on revenues returned to the Federal Government of leasing the proposed acreage.

DEPARTMENTAL COMMENT AND ACTION

As expected, the percentage of tracts receiving bids is declining as the number of sales and total acreage offered increases. This may be in part due to the fact that more marginal acreage is being offered in the Gulf of Mexico and the industry has the opportunity to be more selective. Average prices per acre received in the March 1974 and May 1974 OCS Sales were $4,163 and $2,208 respectively. In comparison, the average price per acre received in the Gulf of Mexico from 1970 through 1973 ranged from $1,535 per acre to $3,108 per acre. The $2,208 per acre received in the May 1974 OCS Texas Sale may reflect the start of a trend toward lower bids in the Gulf of Mexico or it may only be an indication of the quality of acreage offered in that sale. In any event, the $2,208 per acre is not a radical decline from the figures of the last four years. Total yearly returns to the Treasury should increase under accelerated leasing even though returns per sale may decrease.

f. The relative environmental risks involved in each of the areas proposed for lease.

DEPARTMENTAL COMMENT AND ACTION

Environmental risks are scrutinized during several steps of the pre-leasing process. For instance, the Bureau of Land Management requests interested Federal agencies, including EPA, NOAA, GS, and the Fish and Wildlife Service, to prepare reports describing valuable natural resources contained within the general areas of a possible lease sale, and the potential effect of mineral operations upon the resources or upon the total environment. Environmental data will also be developed through a baseline study program planned for all frontier areas.

g. The onshore environmental, social, and economic impacts.

DEPARTMENTAL COMMENT AND ACTION

Presently, the Department's environmental efforts are aimed at evaluating the ecologic, social, and economic repercussions of OCS leasing. It is for this reason that we have committed substantial resources to contract studies, already totalling 25 volumes, that will provide us with detailed assessments of the environmental and socioeconomic consequences of leasing. Additionally, the Department is increasing public, scientific, and other expert input into the decisionmaking process. The California State Lands Commission and State Coastal Zone Commission, the City of Los Angeles and Orange County, the Sierra Club and the Seashore Environmental Alliance have been asked to assign experts to work with BLM's California Office in drafting the environmental impact statement for a possible sale off Southern California.

The Department recognizes that many of the states adjacent to the frontier areas are very concerned with the onshore impact of offshore drilling. We believe the key to this problem is sound planning and good zoning. Needed facilities usually can be placed in environmentally and socially acceptable locations that would be proximate to areas welcoming the employment and tax base potential.

h. The relationship of potential offshore production to total reserves, total consumption, and energy conservation practices.

DEPARTMENTAL COMMENT AND ACTION

The potential offshore production stemming from 10 million acres of leases could provide 20% of the estimated United States consumption in 1985. The large quantity of hydrocarbon resources contained in the OCS may, surprisingly enough, encourage conservation because of the aesthetic, social, and environmental costs associated with OCS development.

The relationship of potential offshore production to total reserves is as follows:

	Oil (billions of barrels)	Gas (trillions of cubic feet)
1. United States:		
(a) Measured reserves	48.3	266.1
(b) Indicated-inferred reserves	25–45	130–250
Total	73.3–93.3	396.1–516.1
2. 10,000,000 million acre sale area:		
(a) Undiscovered recoverable resources	8.4–16.5	38.4–78.0
(b) Percent of total U.S. reserves	9–23	7.5–19.6

OCS Leasing Procedures and OCS Safety and Environmental Protection Activities of the Department of Interior

Under the OCS Lands Act of 1953, the Department of Interior is charged with administering the mineral development of the Outer Continental Shelf. This involves the following functions in the case of hydrocarbons: selection of areas for leasing; supervision of geological and geophysical exploration; meeting the environmental protection requirements of the National Environmental Policy Act; resource evaluation as a major component of determining the resource sale price; conduct of competitive bidding for the resources; supervision of exploratory drilling and production activities on awarded leases to assure environmental protection; safety and resource conservation; and environmental monitoring. The detailed conduct of these activities are carried on primarily by two agencies of the Department: the Bureau of Land Management and the Geological Survey.

Leasing Procedures for the OCS

One of the first steps in the leasing process, which is primarily the responsibility of the Bureau of Land Management, is the selection of general areas for inclusion in a schedule. Factors underlying this selection include initial assessments of hydrocarbon potential, as estimated by both industry and Government, environmental resources that might be impacted by OCS development, alternative energy sources, the availability of technology and the proximity to markets. These are weighed and balanced in developing a schedule of proposed lease sales which will result in the most expeditious discovery and production of oil and gas. Once an area is scheduled for a possible sale, several activities occur: (a) an acceleration of industry's collection of G & G data under DOI permits, (b) DOI baseline studies, (c) the Department's tract selection-impact statement-sale decision process, and (d) detailed resource evaluation of each tract by the DOI.

COLLECTION OF G & G DATA

Most of the information used by both the government and industry on the hydrocarbon potential of various OCS areas is acquired by geological and geophysical surveys. A considerable amount of this data is collected, under permits issued by the Geological Survey, by specialized data collection firms and sold and/or furnished to oil companies and the Department by its own scientists and through contracts.

This geological and geophysical data is used by industry in nominating tracts for lease and to prepare bids and is used by the Department for general sale area identification, for tract selection, environmental assessments, and resource evaluation.

Baseline Studies

Baseline studies are conducted in frontier areas to establish an environmental benchmark to permit continued monitoring after the sale during drilling and production to detect possible adverse effects from these operations. If such adverse effects are detected, additional regulations would be adopted to reduce or eliminate them. Studies cover data on geology, geophysics, biological environment, oceanography and meteorolgy associated with a particular region where offshore leasing may take place. These studies include primary research as well as analyzing existing information.

Call for Nominations

A request for nominations is published in the *Federal Register*. All interested parties are urged to nominate specific tracts in a broad offshore region. In addition to stating which tracts in an area should be studied for possible leasing because of their oil and gas potential, all interested parties (State and local governments, environmental and conservation groups, and industry) are requested to provide environmental, economic, and technical information on why *specific* tracts within an area should be excluded from the leasing process because of significant environmental consideration or other resource conflicts, such as fisheries or recreation.

Announcement of Tracts

The Department uses the nominations of industry, the resource and environmental information received from other Federal, State and local agencies, information received from the public, as well as its own resource, environmental, technological and economic information to select tracts for further analysis in the environmental impact statement.

Draft Environmental Statement (DES)

The draft statement is prepared at the field level where numerous contacts are made with the academic community, private research groups, environmental organizations, and State and local officials. These contacts are essential in order to help ensure a maximum understanding of the environmental and economic concerns and to help gain an understanding of how the local citizenry perceives the issues involved.

The draft statement includes, among other things, a description of the lease proposal, a description of the marine environment and the nearby onshore environment, a detailed analysis on a tract-by-tract basis of any possible adverse impacts on the environment, mitigating measures included in the proposal to reduce the possibility of adverse impacts, alternatives to the proposal and the consultation and coordination with others in preparation of the statement. It also

covers the technology necessary for exploration, development, and production from the proposed sale, as well as possible socio-economic impacts onshore.

The State Government controls and deals with onshore effects such as where pipelines come ashore, but we are actively seeking to work with the States in analyzing and controlling any possible adverse onshore effects.

Pertinent published and unpublished reports and resource evaluations are reviewed in preparation of the DES. When ready, it is submitted to the Council on Environmental Quality and made available to the public for consideration.

Public Hearing

Thirty days after publication of the DES, a public hearing is held. Environmental organizations, the academic community, government representatives, industry and the general public are invited to testify orally or in writing on the draft environmental statement in order to obtain the widest spectrum of views and information possible. All comments submitted for the public hearing are then considered in preparation of the final environmental statement.

Final Environmental Statement (FES)

The comments and contributions of data received through the public hearings are studied, and along with any other late-arising information, are incorporated into the final environmental statement FES. The FES is submitted to the Council on Environmental Quality and made available to the public.

Decision by the Secretary

At least 30 days after the submission of the FES to the Council on Environmental Quality, a final decision is made by the Secretary as to whether or not the proposed sale will be held. The Secretary considers all environmental, resource, economic, and technical information available in the DES, public hearing, and FES, as well as other pertinent information in order to weigh all factors related to his decision.

If the decision is that a sale will be held, determinations are made as to which tracts will be offered and what the lease terms will be. The lease terms may be tailored to any special requirements of any tract, and any tract may be withdrawn at any stage of this procedure on the basis of late-arising environmental data.

Notice of Sale

If a decision is made to hold a sale, a statement is published in the *Federal Register*, giving 30 days advance notice of the date of the sale, the tracts to be included in the sale and the terms under which the sale will be held.

Detailed Resource Evaluation of Each Tract

Following the announcement of tracts, and during the preparation and review of the environmental statement, the Geological Survey geologists, geophysicists and petroleum engineers prepare detailed estimates of the value of the oil and gas on each tract that is being considered for sale. These estimates are based upon geophysical and geological data acquired by industry under permit and by the Department itself, geological data the Department may have from other wells in the area or other geological studies, engineering data relative to the facilities and costs of discovering and producing the oil and gas, and factors considering the probability that oil and gas actually exists on a specific tract. These estimates are delivered to BLM immediately prior to the sale for BLM's use in determining whether a lease shall issue.

Sale

Leases are typically sold on the basis of cash bonus bidding with a 16⅔% fixed royalty. At the lease sale, sealed bids are opened and read. A decision is made to award a lease to the highest bidder only after the Department has evaluated that bid in terms of its own information concerning the tract's value. As discussed earlier, the Geological Survey spends the four to six months prior to a sale preparing detailed estimates of the value of oil and gas on each tract. These estimates, coupled with indicators of competition expressed at the sale, are used by the Department in determining if fair market value has been received.

Throughout the leasing process, the Department has continued liaison with the National Oceanographic and Atmospheric Administration (NOAA), Army Corps of Engineers, the U.S. Coast Guard, Environmental Protection Agency, and all other Government agencies that play a role in managing the OCS. The Department also seeks liaison with the appropriate coastal State agencies that play an active role in their State's coastal lands. The concern for sound Coastal zone management and liaison with these other Federal agencies does not stop with the issuance of a lease but continues through the exploration and production phases.

If oil and gas is found, pipeline permits are issued by the Bureau of Land Management, but only after all safety precautions are met. A pipeline management planning system will be implemented in all frontier areas in order to minimize both onshore and offshore impacts. Pipeline routing on the OCS is determined after consultation with State officials who have authority over pipeline right-of-way in State waters and onshore. Special provisions are made to minimize hazards such as fishing nets becoming snagged on pipelines.

As earlier noted, each pipeline laid on the Outer Continental Shelf requires a permit, which is issued only after all stipulations have been met. Among these stipulations is a requirement that all pipelines in less than 200 foot water depth be buried to a depth of at least three feet and all valves and taps are buried regardless of depth. Close attention is given to bottom stability, tides and currents. Each application is subjected to an environmental analysis, whether it comes ashore or not.

Shore-bound pipelines require permits both from the Federal Government and the adjacent State. Department of the Interior personnel work closely with State authorities to assure that the requirements of each are fully met as well as to select safe routes that will result in the minimum environmental damage and the least adverse onshore impact. It is only when hydrocarbons are found in commercial quantities that it is possible to fully analyze the impact and to develop plans for the routing of the pipeline and the associated onshore activity.

SAFETY AND ENVIRONMENTAL PROTECTION

Once a lease is issued, the exploration and production activities on the lease are under the supervision of the Geological Survey (USGS). This suprvision is carried out theough a set of rules and regulations that are implemented by field inspections and review of applications and proposed plans. The rules and regulations (OCS Orders and Notices) are frequently reviewed and revised through a process allowing for public, local government and industry input to reflect changing technology and environmental and safety standards. The regulations that are now in effect and the various procedures described below are considerably more stringent than those existing at the time of the Santa Barbara spills and will prevent a reoccurrence of that event. The inspection force presently numbers 62 and is scheduled to be expanded to 87 in the coming fiscal year.

Supervision of Drilling Operations

Outer Continental Shelf oil and gas leases are ordinarily forfeited unless found productive within five years from date of issue. Exploratory drilling ordinarily commences on the more promising tracts within a few months after the lease is issued. although some leases may not be tested for two or three years.

Before drilling can be initiated, the lessee must submit an "Application for Permit to Drill." The application must include a contingency plan for handling emergencies during drilling such as spills and fires; a plan of exploration and development; and specific information on such items as the drilling rig, casing design, cementing program, drilling fluid program, and blowout preventer equipment. USGS geologists, geophysicists, and engineers review the application for compliance with orders and regulations and for potentially hazardous conditions that may be anticipated. Unusual hazard conditions such as surface faulting, potential slide areas, shallow gas pockets, or deeper abnormal pressures are made known to the operator. If the possibility exists that the potential hazard might cause an accident during the drilling operation, the lessee will be required to change the drilling plan. Only after the USGS is completely satisfied that safety and environmental requirements can be met will the permit to drill be issued.

As the well is being drilled, casing and drilling fluid programs are followed as approved in the application. As the well reaches a predetermined depth range, a minimum of four remotely-controlled blowout preventers are installed to prevent accidents which may result from penetrating unsuspected high-pressure zones.

Supervision of Production Operations

Following the discovery of an oil or gas field, production platforms are set and additional production wells are drilled. In well-established producing areas, such as offshore Louisiana, production on some leases may commence as early as three years from the date of a lease sale. In frontier areas, where there is no existing petroleum infrastructure, substantial production will probably require considerably more time.

Erection of production platforms, production drilling and production can proceed only upon the authority of an application to install production facilities approved in advance by the Geological Survey. Such applications are reviewed

44-827 O - 75 - 10

to assure that the platform design standards provide safeguards appropriate to water depth, surface and subsurface soil conditions, wave and current forces, wind and earthquake loading, and total equipment weight, as a safeguard against platform failure. The subsurface safety system, the design of the structure, the surface processing and production equipment, and the personnel facilities, together with incoming and departing pipelines are checked against requirements to assure that all components will properly mesh in an effective platform safety system capable of detecting and stopping any leak.

Each barrel of oil produced must pass through a subsurface safety valve, an automatic fail-closed wellhead valve, a flowline protected by high and low pressure sensors, separators protected by high and low pressure sensors and a relief valve; and finally through pumps equipped with high and low sensors. Any abnormal operating condition will result in an automatic production system shut-in. Emergency shut-in controls, which provide a backup means to manually shut in the entire facility, must be located at strategic points on the platform.

To collect any platform contaminants, curbs and gutters must be installed in all deck areas and piped to a sump. Facilities to dispose of water produced with the oil must be designed to reduce the oil content of the disposed water to an average of not more than 50 ppm. In all cases where sewage is to be discharged, disposal systems which yield effluent that meets specified standards must be installed.

The USGS has the specific responsibility to inspect, monitor, and document the day-to-day activities of oil and gas lessees on the Outer Continental Shelf by on-site surveys and by witnessing the testing of safety and pollution control equipment. To facilitate inspections the OCS Orders and Regulations have been condensed into a checklist composed of questions that are answered by the inspection team either positively for compliance or negatively for noncompliance. Each incident of noncompliance requires that the inspector take a prescribed enforcement action which will result in either a warning or a shutdown of operations. If the incident results in a shutdown, the condition must be corrected before operations can be resumed.

Inspection teams composed of petroleum engineering technicians visit OCS facilities, traveling to the activities by helicopter and boat, observing the water surface for any incidents of pollution while en route. Additional flights are made for the sole purpose of pollution detection. Inspections of drilling rigs and related equipment in the Gulf of Mexico are conducted at least once during the drilling of each wildcat well and during drilling of the first development well from a platform. New production facilities are inspected upon commencement of operations. All major platforms are scheduled for inspection semi-annually. All drilling rigs and production platforms in the Dos Cuadras Field in Santa Barbara Channel are inspected daily.

Blowouts, fires, pipeline leaks, and other accidents are investigated by the inspection teams to determine the contributing factors involved in an accident so that proper steps may be taken to avoid such accidents in the future.

To inform all lessees about the probable cause of certain equipment failures, "Safety Alert" notices are sent out to all OCS lessees to provide details of a hazardous situation that has resulted in an incident. This information enables lessees not involved in a particular incident to evaluate similar situations in their own operations and thus help eliminate potential hazards in the future.

Efforts to Improve Safety of OCS Operations

Since the oil spill in Santa Barbara Channel in January 1969 a large number of specific actions have been taken to provide more effective supervision of drilling and producing operations on the Outer Continental Shelf, including the following:

Inspection force increased from 7 in 1968 to the present 62, with an additional 25 programmed for FY 1976.

Regulations updated and revised on all phases of drilling and production, including casing depths and cementing practices, blowout preventer equipment, remotely activated subsurface safety valves, pollution and waste disposal, and well completion. A 20-well platform now has about 300 safety devices.

OCS supervision activities have benefited from the adoption of many recommendations contained in published studies on the OCS operations made by the National Academy of Engineering, a team of National Aeronautics and Space Administration experts, a team of USGS analysts, a University of Oklahoma study sponsored by the National Science Foundation, and the Council of Environmental Quality's environmental assessment of OCS oil and gas operations.

Accident investigation procedures were established with the requirement that reports of major accidents be made available to the public.

Operators are now required to submit contingency plans for oil spill containment and cleanup prior to any lease operations. Clean-up organizations and equipment are available to all areas where drilling and production are in progress.

A Review Committee to provide an independent audit of the effectiveness of USGS operations and procedures has been established under the aegis of the National Academy of Engineering.

Three cooperative committees have been established with the American Petroleum Institute on offshore safety and anti-pollution research, standards, and training. An important result of these committee actions has been the development and issuance of a specification for subsurface safety valves and a recommended practice for design, installation, and operation of subsurface safety valve systems.

The "Safety Alert" system previously referred to was established.

The results of these measures to improve the safety performance of OCS operators are apparent in the extremely low frequency rates of pollution-causing accidents. Since the beginning of 1969 more than 5,000 wells have been drilled on the OCS, of which only four resulted in accidents that caused an oil spill of more than 250 barrels. All occurred in the Gulf of Mexico. In the Santa Barbara Channel more than 200 wells have been drilled without incident since 1969.

The total of all major accidents from both drilling and production was 13, of which eight resulted in any significant oil pollution. During this period the number of fixed structures on the OCS increased from 1,575 to more than 2,000.

U.S. Department of the Interior,
Office of the Secretary,
Washington, D.C., November 13, 1974.

Dr. Russell W. Peterson,
Chairman, Council on Environmental Quality,
Washington, D.C.

Dear Dr. Peterson: We have studied with interest CEQ's report "OCS Oil and Gas—An Environmental Assessment," dated April 18, 1974, and in particular its recommendations. We fully concur with the theme of that report that the environmental conditions of the OCS must be fully understood and carefully considered in any oil and gas development of the OCS if that development is to occur in an environmentally acceptable fashion. Furthermore, we are in basic agreement with the report's recommendations.

As you note in your report, the Department has become increasingly aware in the past five years of the environmental conditions of the Outer Continental Shelf. I believe the Department is taking very seriously its responsibilities for protecting the environment as it selects areas for mineral development and as it supervises activities on those mineral leases. We have made a significant number of changes in the conduct of OCS activities since the oil spill at Santa Barbara in 1969 and the passage of the National Environmental Policy Act. Recommendations from several other studies of OCS lease management have been adapted including a Safety Alert System and accident investigation procedures.

The Department has become increasingly concerned with the environmental sensitivity and multiple resource potential of the OCS and has taken a number of actions to safeguard the environment as well as to increase the safety of life and property and to protect the value of all OCS resources.

Six of the OCS Orders that basically prescribe the day-to-day operations on OCS oil and gas leases have been revised and strengthened. In addition, six new Orders have been issued.

There are now six inspectors in the Santa Barbara area on the California coast to inspect those activities on a daily basis. In the Gulf of Mexico, the number of inspectors has been increased from 7 in 1969 to 37.

The inspection procedures have been streamlined and codified, and the inspections have been intensified. During the first nine months of 1974, 866 drilling rig inspections and 2095 production platform inspections were made in the Gulf of Mexico. As a result of these inspections, 2569 enforcement actions were taken. The increased number of inspectors have been given additional mobility for over-flights and for regular and unannounced inspections of platforms by the leasing of eight helicopters in the Gulf of Mexico. Helicopters and aircraft are available as needed

on a daily basis in the Santa Barbara Channel. We believe that this increased inspection capability, the systematic inspection procedures, and the revised regulations, coupled with tough but fair enforcement attitudes, have greatly increased the safety in which exploratory and production operations are now conducted on OCS leases.

With the passage of NEPA, the environmental assessments conducted to prepare Environmental Impact Statements, the Environmental Impact Statements themselves, and related public hearings, have greatly increased our knowledge of environmental conditions of OCS tracts prior to their being offered for sale. Fifteen Environmental Impact Statements have been prepared concerning OCS lease sales and lease operations. The NEPA process and information generated by it have provided a means to eliminate from each proposed sale those tracts which might be difficult to develop in an environmentally acceptable fashion. The process and knowledge also have allowed us to place special stipulations on the development of certain tracts; for example:

> Structures for drilling or production, including pipelines, shall be kept to the minimum necessary for proper exploration, development, and production and to the greatest extent consistent therewith, shall be placed so as not to interfere with other significant uses of the Outer Continental Shelf, including commercial fishing. To this end, no structure for drilling or production, including pipelines, may be placed on the Outer Continental Shelf until the Supervisor has found that the structure is necessary for the proper exploration, development, and production of the leased area and that no reasonable alternative placement would cause less interference with other significant uses of the Outer Continental Shelf including commercial fishing. The lessee's exploratory and development plans, filed under 30 CFR 250.34, shall identify the anticipated placement and grouping of necessary structures, including pipelines showing how such placement and grouping will have the minimum practicable effect on other significant uses of the Outer Continental Shelf, including commercial fishing.

The Department has conducted studies dealing with lease management and has sponsored similar studies conducted by NASA and the NAE, and most recently has benefitted by the University of Oklahoma study sponsored by the National Science Foundation. The recommendations of these reports have been carefully studied and most have aleady been implemented and the implementation of others is underway. (Specific examples are cited in Appendix I.)

While the OCS leasing procedures and lease supervision have been significantly improved in the past five years, we welcome your views at this time when we are accelerating OCS leasing and considering several "frontier areas."

A number of the recommendations outlined in Chapter 1 of your report "OCS Oil and Gas—An Environmental Assessment" (pages I–25 through I–28) have already been adopted. The balance of the recommendations are in the process of being implemented or are under study. (Details concerning Department action are contained in Appendix II.) With the benefit of constructive suggestions and recommendations such as those in your report, I believe we can meet the challenge of protecting the OCS environment as we lease and develop its great potential oil and gas resources. We are looking forward to your continuing assistance.

Sincerely,

ROGERS C. B. MORTON,
Secretary of the Interior.

APPENDIX I—IMPLEMENTATION OF RECOMMENDATIONS FROM EARLIER STUDIES OF OCS LEASE MANAGEMENT

Following are selected examples of actions taken to implement recommendations concerning OCS lease management from studies by the National Aeronautics & Space Administration (November 1971), National Academy of Engineering (December 1972), and the University of Oklahoma sponsored by the National Science Foundation (June 1973):

(1) A review committee to serve as independent advisors on the effectiveness of the U.S. Geological Survey's operations and procedures has been established under the aegis of NAE.

(2) A Safety Alert System has been established to immediately notify all operators of failures and the accidents in order that they may take appropriate actions to prevent occurrences on their leases.

(3) Accident investigation procedures have been established to quickly provide a government determination of the cause of accidents and reports of major accidents are now made available to the public.

(4) Lease operators are now required to submit contingency plans for oil spill containment and clean-up prior to any lease operations. (Large amounts of boom and assorted materials, power boats, and other oil containment devices are now available both in the Gulf of Mexico and on the Pacific coast through clean-up companies supported by a consortium of oil companies involved in offshore operations to provide for quick and effective clean-up of any oil that may be spilled.)

APPENDIX II—DEPARTMENT ACTION ON CEQ RECOMMENDATIONS REGARDING OCS LEASING AND DEVELOPMENT AS CONTAINED IN CHAPTER 1 OF CEQ REPORT "OCS OIL AND GAS—AN ENVIRONMENTAL ASSESSMENT"

The CEQ report contained 16 recommendations concerning OCS technology and practices (pp. I–25 to I–28):

1. *Human factors engineering.*—The utilization of formal human factors engineering techniques in the design of equipment and development of procedures for use on the OCS is recognized as a means of helping reduce accidents and pollution caused by human error. The USGS will work with industry and organizations specializing in human factors engineering to develop appropriate requirements and techniques for OCS operations and will ensure that these are applied. The USGS is planning a systems design analysis program as a result of previous study recommendations which considers human error and its prevention.

2. *OCS operator personnel.*—The OCS Orders will be modified to incorporate standards and requirements currently being developed for the training of key company personnel as a prerequisite for inspecting, testing, and for certain permits and operational work on the OCS.

3. *Measurement of downhole pressure during drilling.*—This is one proposed process approach to the early identification of potential blowouts in which the Geological Survey is engaged in a study of what research is being conducted, what technological developments are available, and what further research needs to be promoted, including this important question of downhole pressure. Upon completion of the study, appropriate recommendations resulting from it will be implemented. The Department intends to require through its OCS Orders the use of state-of-the-art technology.

4. *Performance standards for drilling platforms in new OCS areas.*—The Department is coordinating with appropriate agencies, having expertise or authority, to develop site-specific lease requirements incorporating appropriate performance standards for drilling for each new OCS lease area, starting with the MAFLA area.

5. *Disposal of drilling mud.*—OCS operations including the disposal of drilling muds and drill cuttings are required to comply with provisions of the Federal Water Pollution Control Act (1972 amendments). Common guidelines for specific implementation for particular material are being developed in conjunction with EPA and an agreement on enforcement procedures is being negotiated.

6. *Performance standards for production platforms in new OCS areas.*—The planned development of the Systems Design Analysis Program mentioned above will provide a review procedure for evaluating platform design in new OCS areas on a case-by-case basis, and a more comprehensive basis for standards development and will identify the need for revisions of or additions to OCS Orders.

7. *Subsea production equipment.*—A task force of technical personnel from the Geological Survey has been appointed to assess the state-of-the-art of subsea production equipment. Standards and specifications will be developed concerning the safety and pollution control aspects of such systems for incorporation into the Gulf of Mexico OCS Orders in the near future and eventually into OCS Orders for other leased areas.

8. *Surface-actuated subsurface safety valves.*—Standards for the design fabrication and installation of surface-activated subsurface safety valves have been prepared by a joint government-industry working group and submitted to the OCS Review Panel of the Marine Board, National Academy of Engineering, for review. These standards will be published for public review prior to being formally incorporated into OCS Orders. OCS Orders starting in 1972 have required the use of surface-actuated subsurface safety valves in new wells except on high pressure wells which require subsurface controlled valves.

9. *Effluent standards for waste water discharges.*—OCS operations including the disposal of drilling muds and drill cuttings are required to comply with provisions of the Federal Water Pollution Control Act (1972 amendments). The coordination of activities to enforce these requirements which are being formulated by EPA is being negotiated between EPA and the Department.

10. *Minimizing blowouts during well workovers and service operations.*—OCS Orders relating to well workovers and servicing operations are in preparation.

11. *Reporting system for OCS accidents.*—The design of a Departmental comprehensive Failure Reporting and Corrective Action System was started in July 1973 and is nearing completion. A "Safety Alert" System for immediate notification of failures and accidents was established in September 1972. The feasibility and design of a common system to the needs of all potential user agencies will be discussed with EPA and DOT in the near future.

12 and 13. *OCS pipeline protection and pipeline corridor siting.*—A Memorandum of Understanding relating to corridor siting for OCS pipeline corridor siting has been negotiated between USGS and BLM. A Memorandum of Understanding relating to OCS pipeline safety standards, performance requirements and inspection will be developed by USGS and the Office of Pipeline Safety, DOT.

14. *Safety practices and construction for coastal trade oil tankers.*—The Department is on record as supporting a requirement that ships engaged in the transport of North Slope oil have segregated ballast capacity and double bottoms because of the unusual environmental conditions of that shipping route.

15. *Performance standards for offshore storage facilities.*—The Department will develop such standards to be included in OCS Orders for all areas utilizing appropriate expertise of DOT.

16. *Oil spill containment and clean-up.*—OCS Order No. 7 which deals with oil spill containment and clean-up will be modified as appropriate for any new operational areas in coordination with appropriate agencies having technical or environmental expertise and/or authority.

The CEQ report contains 12 recommendations dealing with planning, coordination and regulation (pp. I–29 to I–32):

17. *Federal cooperation with State Coastal Zone Management.*—The Department is increasing its efforts to work with the state agencies directly responsible for coastal zone planning during the preparation of Environmental Impact Statements for proposed lease sales in accordance with CEQ guidelines. For example, prior to the December 1973 sale offshore Mississippi, Alabama, and Florida, the Department committed itself to working with the states to thoroughly coordinate and analyze the placement of pipelines (see also response to Nos. (12) and (13)) in order to make certain that they are placed in areas which are the least environmentally hazardous. A two-way dialogue has been started with the State of California's Coastal Zone Commission including a Department invitation to the Commission to name one or more experts to work with the Department in drafting an Environmental Impact Statement for a possible sale off Southern California.

18. *State input in design of environmental studies.*—The Department established on March 20, 1974, an OCS Research Advisory Board which includes members from the coastal states. The Board individually and collectively assists in identifying the need for environmental studies, and reviews the major OCS environmental study proposals and the study findings.

19. *Inclusion of OCS petroleum support facilities in State Coastal Zone Plans.*—While recognizing that the states have the basic responsibilities for general and site-specific planning, zoning, and permitting of pipelines, refineries and other onshore facilities, the Department, as noted in item (17), intends to actively involve the states in each new OCS area in planning for possible OCS sales.

20. *Department of Energy and Natural Resources.*—The Department of Interior continues in its longstanding support for the establishment of a Department of Energy and Natural Resources. In the meantime, the Department will increase its efforts to work with the Departments of Transportation, Commerce (NOAA), and Defense (Corps of Engineers), EPA, FPC, and others to coordinate its regulatory authority with theirs.

21. *Treatment of alternative OCS uses and onshore impacts in the Environmental Impact Statements.*—The Department is presently including in its Environmental Impact Statements discussions of the overall onshore impacts and will continue to do so in the future. Specific treatment of the alternatives to onshore development associated with offshore oil and gas operations should be considered in coastal zone management plans that are being developed by each state.

Consideration of alternatives to OCS resource development that would extend the environmental analyses beyond energy considerations requires the environmental statement to be a major planning device and would obscure the proposals

to develop an energy resource. We do not believe the OCS statement is the place to effectively conduct such planning.

22. *Regional and programmatic impact statement.*—The Department is preparing an impact statement for the proposed accelerated 10 million acre leasing program that will include regional assessments. The Department, however, questions the desirability of preparing a single statement involving all Federal agencies proposing environmentally significant activities on the OCS because the timing of such proposals would not necessarily coincide and the size and scope of such a statement would be mammoth and too generalized for effective decision-making. We do agree, though, that the circulation and comment process can be more effectively used to partially reconcile OCS program objectives of various agencies.

23. *A cquisition and analysis of environmental data.*—The Department intends for all sales in the new areas to gather and analyze through its impact studies and baseline monitoring program prior to lease and during exploration and development the appropriate data needed to assess possible environmental hazards.

24. *Disclosure of industry data and analysis.*—The Department published on May 16, 1974, in the *Federal Register*, a proposed set of regulations dealing with the submittal and public disclosure of geological and geophysical data collected by the petroleum industry. A public hearing was held July 15 and 16, 1974. A revised set of proposed regulations will be published in the near future.

25. *Sanctions for violation of OCS Orders.*—The systematic use of existing sanctions in the past couple of years has proven to be effective in reducing the number of incidents of non-compliance, fires and oil spills. These sanctions include mandatory shut-in of operations found to be not in compliance and submitting recommendations to the Department of Justice for actions to be taken under the penalty provision of the OCS Lands Act for knowing and willful violations detected. The Department does not believe that additional sanctions would produce safer operating or environmental conditions at this time.

26. *Frequency and type of inspections.*—A schedule was issued on December 13, 1973, to field personnel for the frequency of inspections for drilling and producing operations. A study of alternative inspection strategies is currently being conducted, and a formal course of training has been established for the inspection staff. Additional staffing to be obtained in FY 1975 will permit inspection of other types of activities according to a prescribed schedule. The Geological Survey will familiarize representatives of state agencies with inspection procedures of OCS operations adjacent to their states.

27. *Citizen suit provisions.*—The Department believes the relation between the Congressional, Executive, and Judicial branches of government implied in the existing law and regulation is a proper one and effectively provides compliance with regulations promulgated to attain all objectives of the OCS Lands Act.

28. *Comprehensive Federal liability system.*—Under current regulations (30 CFR sec. 250.43), lessees are responsible for containment and removal of pollutants that damage or threaten to damage aquatic life, wildlife, and public or private property. Settlements arising out of the Santa Barbara spill have additionally set a precedent for holding lessees liable for damages to third parties under existing law and current leases. The Department, in conjunction with CEQ and other concerned agencies, is studying various proposals for Federal law governing liability for oil spills—such as the Act of November 16, 1973 (87 Stat. 576, P.L. 93–153) which includes authority to construct the Trans-Alaska Pipeline (TAPS); the proposed Deepwater Ports bill in the Senate (S. 1751); and the Energy Supply Act of 1974 (S. 3221) to increase the supply of energy in the United States from the OCS; to amend the OCS Lands Act and for other purposes—with a view toward arriving at a uniform system that would really facilitate full recovery by an injured party.

Additionally, the CEQ report identified the need for well-designed biological baseline and monitoring studies and for additional marine biological research (pages I–12 and I–32). As noted above, the Department intends to conduct biological baseline and monitoring studies in all future new sale areas. During FY 1975, environmental studies will be or are being conducted under the general surveillance of the OCS Research Advisory Board in the following five areas: offshore South Texas; offshore Southern California; the Gulf of Alaska; the Atlantic; and offshore Mississippi, Alabama, and Florida. The aim of this program is to establish pre-operational bench-mark data on those critical parameters in the OCS environment which may be used in later monitoring to watch the effects of oil and gas development.

DEPARTMENT OF THE INTERIOR

BUREAU OF LAND MANAGEMENT

(News Release—November 14, 1974)

BLM ANNOUNCES NEW TENTATIVE OCS LEASE SALE SCHEDULE THROUGH 1978

The Department of the Interior's Bureau of Land Management has released a new four-year planning document for proposed oil and gas lease sales on the Nation's Outer Continental Shelf. The announcement was made by Secretary Rogers C. B. Morton at a meeting November 13 with coastal States Governors, Governors-elect and their representatives at the White House, where plans for expanded OCS leasing were discussed.

The new planning schedule, prepared by the Bureau of Land Management which has responsibility for planning and conducting lease sales, projects sales through December 1978. Sales are projected in several frontier areas, including sales in the Gulf of Alaska and the Atlantic Seaboard in 1975.

These frontier areas have been proposed for oil and gas sale leasing to meet the Nation's current and future petroleum and natural gas energy needs. The undiscovered but recoverable resources of the OCS are estimated to be as much as 58 billion to 116 billion barrels of oil and from 355 trillion to 710 trillion cubic feet of natural gas.

The Secretary, in announcing the schedule explained that such a plan for developing the OCS is necessary to meet the Nation's energy needs through the 1980's. During this period, alternative energy sources will have only a limited impact, and while conservation measures may substantially reduce demand for petroleum, additional petroleum supplies will be needed.

The OCS resources represent the most practical immediate solution for providing more domestic oil and gas at a time when imports are uncertain and their cost is accelerating, Department officials said.

The new proposed leasing schedule is essential as a planning document so that industry and government can allocate resources. It also establishes sufficient time to conduct environmental baseline survey studies of the frontier OCS areas, and to prepare for appropriate environmental protection measures.

A draft environmental statement on the expanded and accelerated OCS leasing program for 1975 was made public on October 21. Public hearings on the accelerated leasing program are scheduled to be held in December.

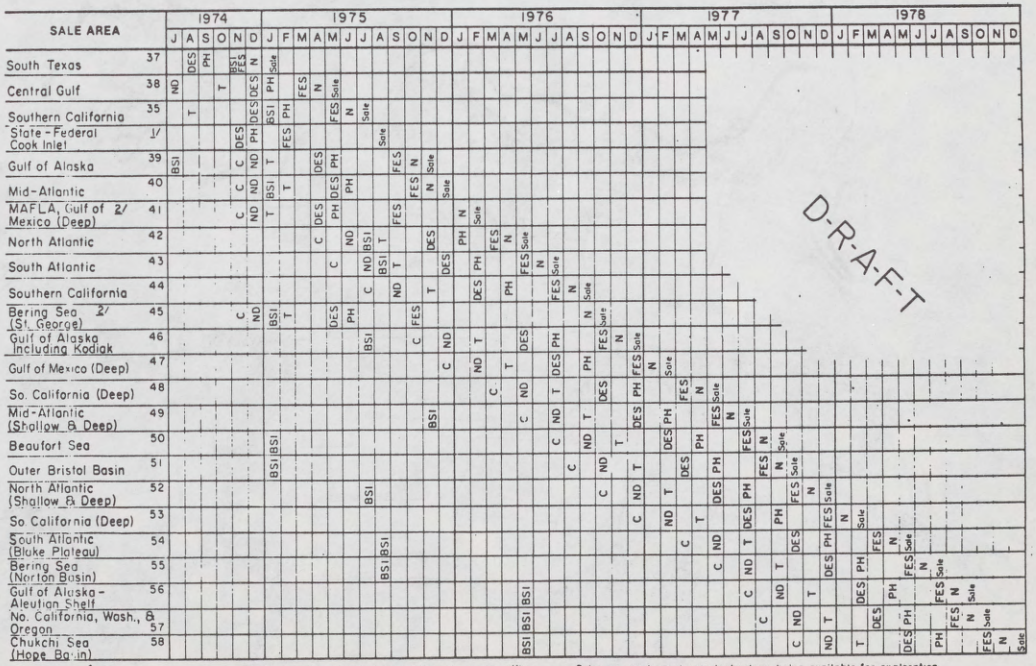
The new four-year planning document is for interim planning purposes only. The Secretary of the Interior will not decide to hold any proposed sale of a specific area until after environmental impact statements are published and additional public hearings held for each area involved.

The new planning schedule proposes nine sales in Alaskan offshore waters and five in waters off the Atlantic Seaboard over the four-year period. There is also one sale proposed for the area off northern California, Oregon, and Washington.

Six of the proposed sales involve waters deeper than the 200-meter mark. The deep water sales are proposed for the eastern Gulf of Mexico, southern California, and the mid and southern Atlantic areas.

Leasing Schedule and Maps attached.

PROPOSED OCS PLANNING SCHEDULE



BSI Baseline Studies Initiated.
C Call for Nominations
ND Nominations Due
T Announcement of Tracts
DES Draft Environmental Statement
PH Public Hearing
FES Final Environmental Statement
N Notice of Sale

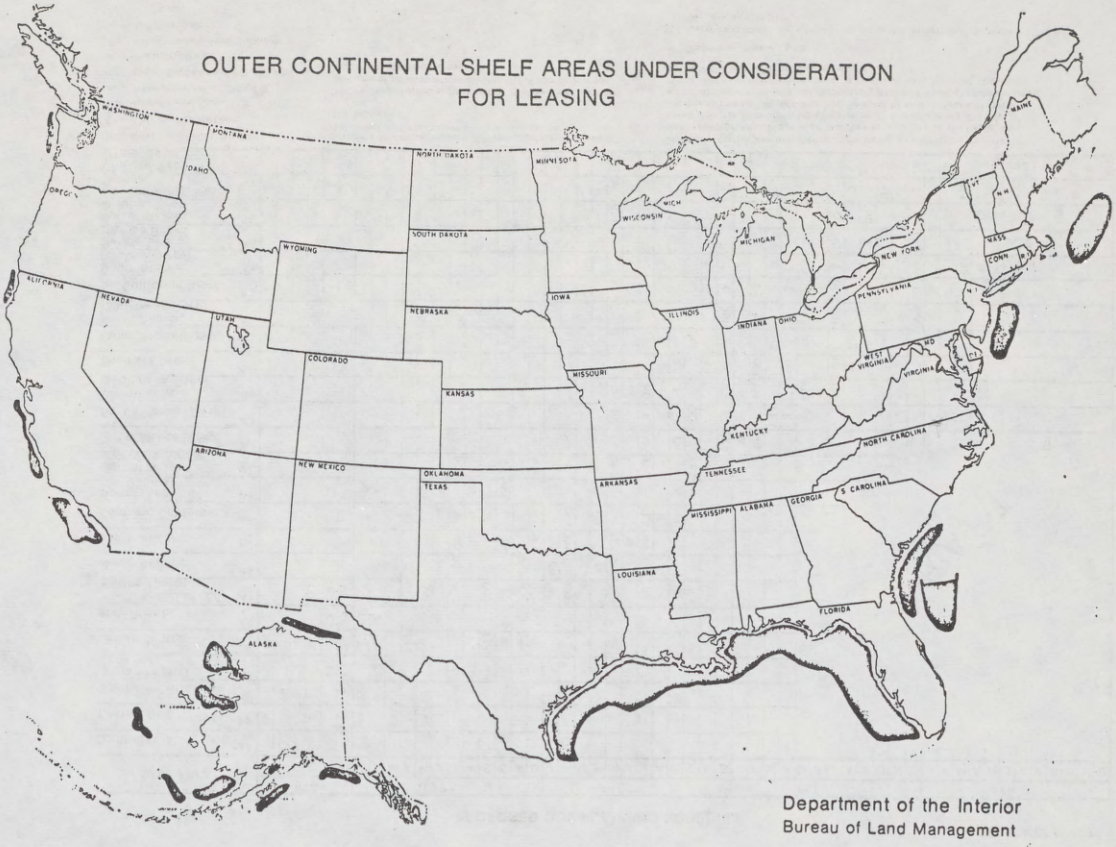
Baseline studies scheduled are contingent upon scientific personnel and equipment being available to perform the studies.

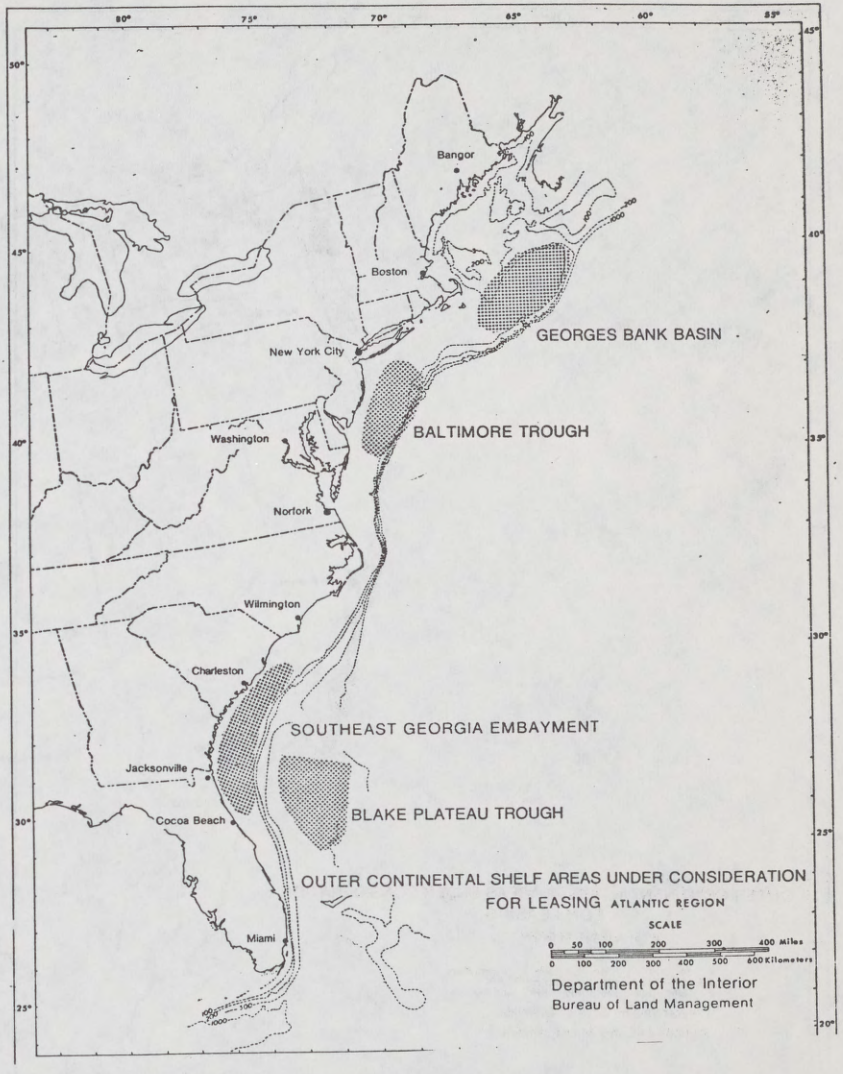
The holding of sales in the Atlantic is dependent upon the outcome of pending litigation with the Atlantic States regarding jurisdiction over this area.

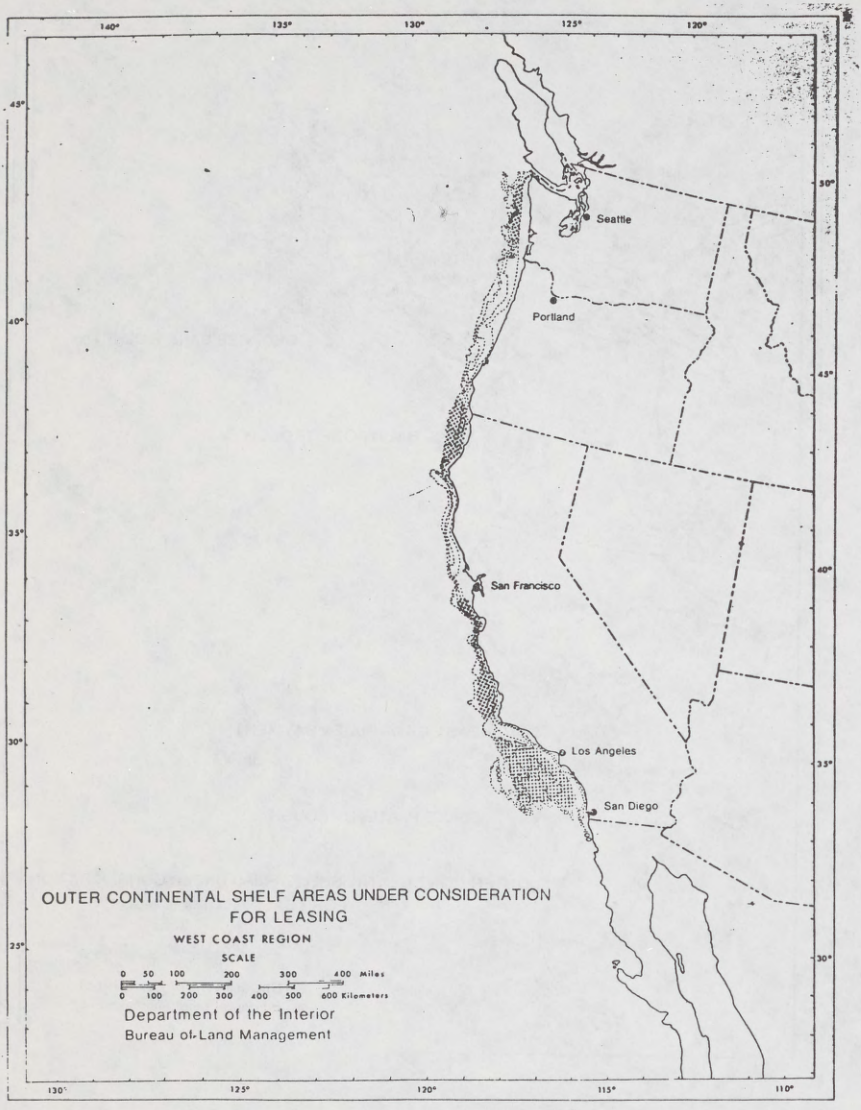
Sales are contingent upon technology being available for exploration and development. A decision whether to hold any of the lease sales listed will not be made until completion of all necessary studies of the environmental impact and the holding of public hearings; as a result of the environmental, technical, and economic studies employed in the decision-making process, a decision, may, in fact, be made not to hold any sale on this schedule.

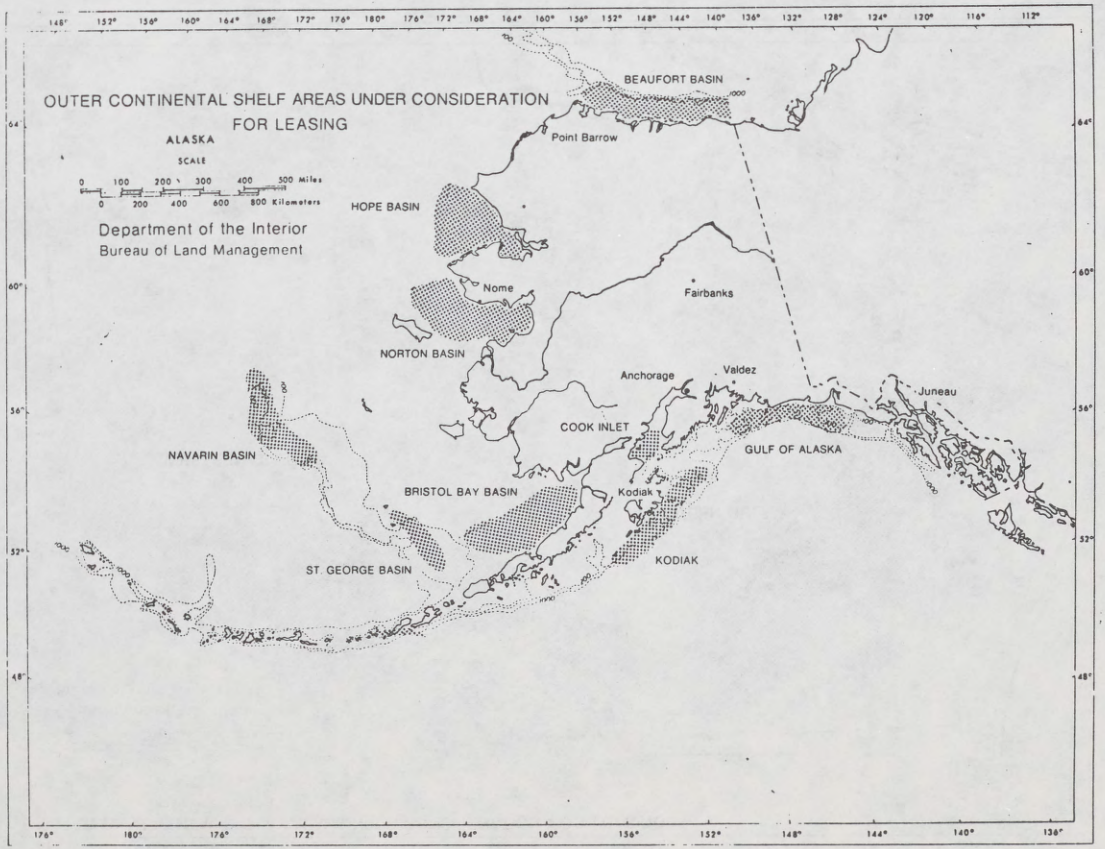
1/ State may conduct sale.

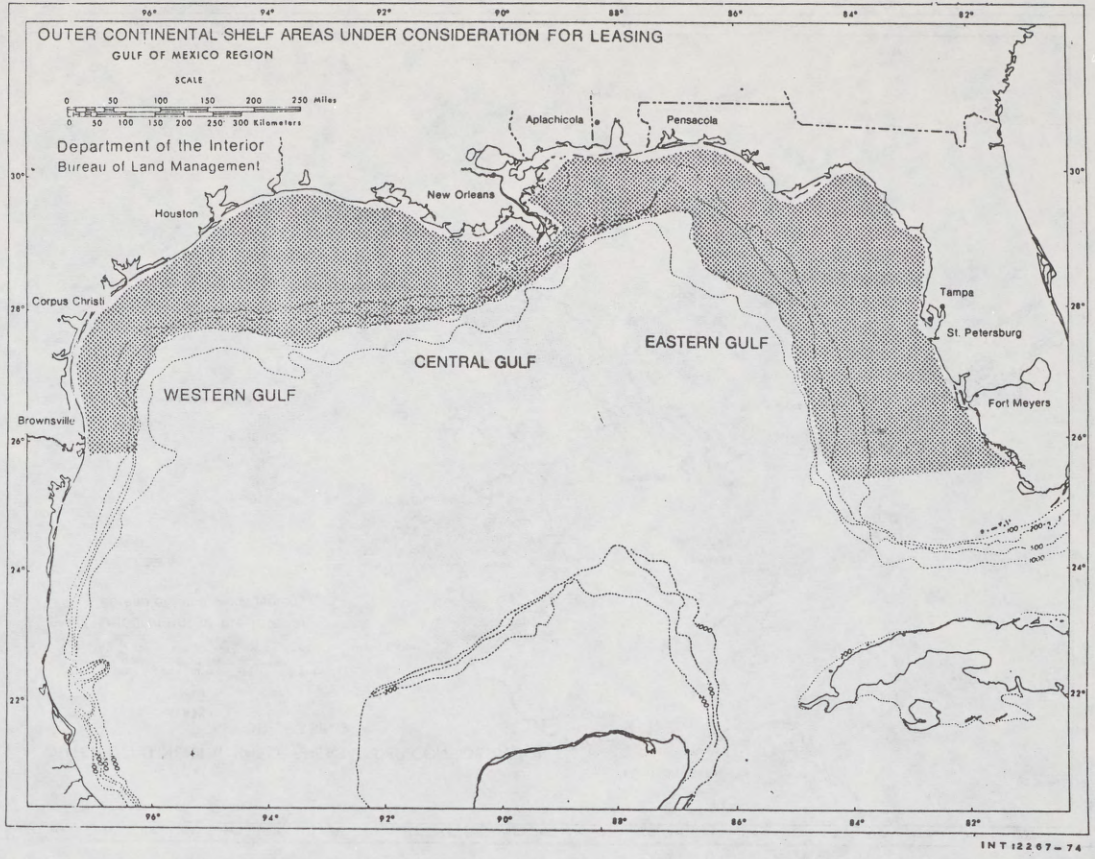
2/ These sales could be contingency sales for either Gulf of Alaska (39) or Mid-Atlantic (40).


OUTER CONTINENTAL SHELF AREAS UNDER CONSIDERATION
FOR LEASING
WASHINGTON
OREGON
CALIFORNIA
NEVADA
IDAHO
MONTANA
WYOMING
UTAH
ARIZONA
COLORADO
NEW MEXICO
NORTH DAKOTA
SOUTH DAKOTA
NEBRASKA
KANSAS
OKLAHOMA
TEXAS
MINNESOTA
IOWA
MISSOURI
ARKANSAS
LOUISIANA
WISCONSIN
ILLINOIS
MICHIGAN
INDIANA
OHIO
KENTUCKY
TENNESSEE
MISSISSIPPI
ALABAMA
GEORGIA
FLORIDA
S CAROLINA
NORTH CAROLINA
VIRGINIA
WEST VIRGINIA
PENNSYLVANIA
NEW YORK
MAINE
MASS
CONN
ALASKA
Department of the Interior
Bureau of Land Management


80°
75°
70°
65°
60°
55°
45°
40°
35°
30°
25°
20°
Bangor
Boston
New York City
Washington
Norfork
Wilmington
Charleston
Jacksonville
Cocoa Beach
Miami
GEORGES BANK BASIN
BALTIMORE TROUGH
SOUTHEAST GEORGIA EMBAYMENT
BLAKE PLATEAU TROUGH
OUTER CONTINENTAL SHELF AREAS UNDER CONSIDERATION FOR LEASING ATLANTIC REGION
SCALE
0 50 100 200 300 400 Miles
0 100 200 300 400 500 600 Kilometers
Department of the Interior
Bureau of Land Management


140°
135°
130°
125°
120°
45°
40°
35°
30°
25°
Seattle
Portland
San Francisco
Los Angeles
San Diego
OUTER CONTINENTAL SHELF AREAS UNDER CONSIDERATION FOR LEASING
WEST COAST REGION
SCALE
0 50 100 200 300 400 Miles
0 100 200 300 400 500 600 Kilometers
Department of the Interior
Bureau of Land Management
130°
125°
120°
115°
110°


OUTER CONTINENTAL SHELF AREAS UNDER CONSIDERATION FOR LEASING
ALASKA
SCALE
0 100 200 300 400 500 Miles
0 200 400 600 800 Kilometers
Department of the Interior
Bureau of Land Management
BEAUFORT BASIN
Point Barrow
HOPE BASIN
Nome
Fairbanks
NORTON BASIN
Anchorage
Valdez
Juneau
COOK INLET
GULF OF ALASKA
NAVARIN BASIN
BRISTOL BAY BASIN
Kodiak
KODIAK
ST. GEORGE BASIN


OUTER CONTINENTAL SHELF AREAS UNDER CONSIDERATION FOR LEASING
GULF OF MEXICO REGION
SCALE
0 50 100 150 200 250 Miles
0 50 100 150 200 250 300 Kilometers
Department of the Interior
Bureau of Land Management
Aplachicola
Pensacola
New Orleans
Houston
Corpus Christi
Tampa
St. Petersburg
Fort Meyers
Brownsville
WESTERN GULF
CENTRAL GULF
EASTERN GULF
96°
94°
92°
90°
88°
86°
84°
82°
30°
28°
26°
24°
22°
INT 12267-74

U.S. Department of the Interior,
Office of the Secretary,
Washington, D.C., January 11, 1974.

Memorandum

To: Under Secretary.
From: Acting Deputy Assistant Secretary—Program development and budget.
Subject: Accelerated OCS leasing.

I am transmitting with this memorandum a paper entitled Accelerated Leasing of the OCS written in response to your request for a comprehensive program proposal on OCS leasing.

William A. Vogely.

Acceleration of OCS Leasing

I. Introduction and Summary

The goal of the OCS leasing program is to maximize the value of the oil and gas resource to the Nation, net of costs including those to the environment, while assuring the return of fair market value to the Treasury. There is now strong evidence that the current planned leasing rate of 3 million acres per year is much too low:

The need for more domestic oil is clear from rising world prices, shortages, and the desirability of insurance against cutoffs of imports.

There is general agreement that the OCS, along with the North Slope, is the best known domestic source of more oil and gas.

High bonus bids on recent OCS lease sales, and on the first oil shale tract, are evidence that the excess of the value of these resources over production costs is rising.

In the light of this evidence, it would almost certainly be bad public policy to leave OCS leasing at its present rate. Choosing the "proper" rate is very difficult, but we believe that 10 million acres per year is unlikely to be too high.

We therefore propose the following major actions:

Accelerate leasing to aim at a goal of leasing 10 million acres per year in 1975 and subsequent years.

Change to a two-tier system of tract selection, first calling for regional nominations by industry, and then, after environmental and resource investigation by GS of the leading regions, choosing areas in which to call for nominations of tracts.

Forbid joint bidding by the major oil companies, to protect the level of competition in lease sales.

Remove price controls on steel pipe and other materials essential to exploration and development.

Require more rapid publication of industry exploration and production data.

Consider mandatory reporting of industry data.

Augment appropriately the staffs and funding of GS, BLM, the Solicitor and the Office of Environmental Project Review.

Appoint a Departmental OCS Coordinator, and direct the Assistant Secretary for Management to recommend OCS program organization changes, if any, but do not make major organizational changes until the 10-million-acre leasing rate has been achieved.

We also recommend that the following practices *not* be adopted, on grounds that they would hamper acceleration of production:

Stronger diligence requirements in the leases.

Increased royalty rates.

Rejection—bids of a flat dollar amount per acre.

"Checker-board" leasing.

II. The Contribution of Accelerated OCS Leasing to Domestic Energy Supplies

The current OCS lease schedule is designed to lease 3 million acres per year over the next five years. Production of oil and gas on OCS land already under lease is currently running at .5 billion barrels and 3.1 trillion cubic feet respectively on an annual basis. Projected production of oil and gas under the current lease schedule, and under accelerated leasing rates of 4, 5, and 10 million acres per year are shown in figures 1 and 2.

Each of the accelerated leasing schedules was assumed to rise from an annual leasing rate of 3 million acres in 1974 to its new rate in calendar year 1975. The 5 and 10-million acre leasing schedules would consist of four sales a year, with an average acreage sold per sale of 1.25 and 2.5 million, respectively.

Two important assumptions, both optimistic ones, were made in these projections: Drilling equipment and personnel are assumed to be available, and only customary or normal delays are assumed between the lease sale and production:

Region	*Production delay*
Gulf of Mexico:	
within 200 meters	2 years
beyond 200 meters	3 years
Atlantic	8 years
Alaskan waters	10 years
Southern California:	
initial 2 sales	4 years
later sales	3 years

The additional acreage leased in each province was assumed to be as productive as the land scheduled to be leased in that province under the existing lease schedule. This assumption tends to inflate the production estimates, because the present schedule probably includes the best areas in the province. In all cases, however, the added acreage does have reasonable potential for production.

While both of these assumptions may cause the estimate to be too high, it is striking that *even if the projected increases are cut in half,* leasing at the 10-million-acre rate could provide 4.8 billion added barrels of oil per year by 1986, enough for national self-sufficiency. So, while accelerated leasing has only small effects on output for the first few years, it has great potential for the long run.

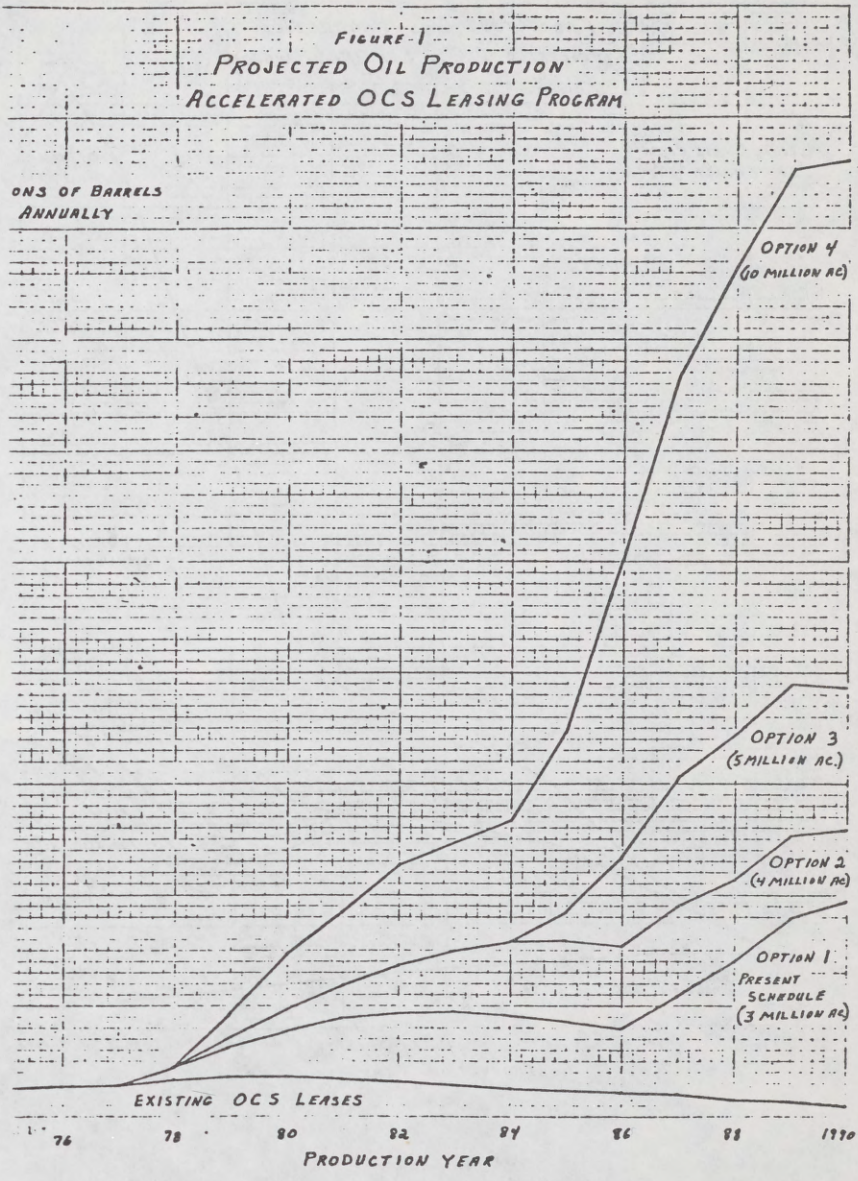


FIGURE 1
PROJECTED OIL PRODUCTION
ACCELERATED OCS LEASING PROGRAM
ONS OF BARRELS
ANNUALLY
OPTION 4
(10 MILLION AC)
OPTION 3
(5 MILLION AC.)
OPTION 2
(4 MILLION AC)
OPTION 1
PRESENT
SCHEDULE
(3 MILLION AC)
EXISTING OCS LEASES
76
78
80
82
84
86
88
1990
PRODUCTION YEAR

44-827 O - 75 - 11

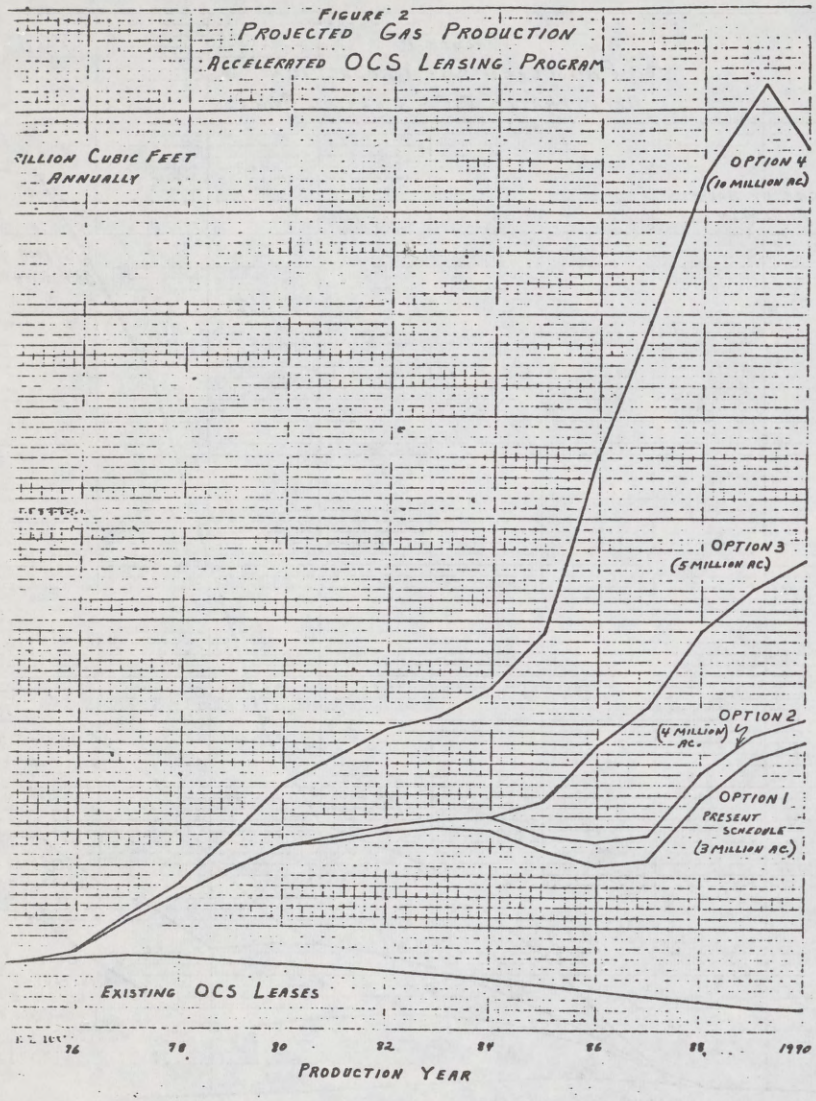


FIGURE 2
PROJECTED GAS PRODUCTION
ACCELERATED OCS LEASING PROGRAM
ILLION CUBIC FEET
ANNUALLY
OPTION 4
(10 MILLION AC)
OPTION 3
(5 MILLION AC.)
OPTION 2
(4 MILLION AC.)
OPTION 1
PRESENT
SCHEDULE
(3 MILLION AC.)
EXISTING OCS LEASES
76
78
80
82
84
86
88
1990
PRODUCTION YEAR

III. PROBLEMS OF ACCELERATED LEASING AND RECOMMENDED ACTIONS

There are several problems associated with a rapid acceleration of the OCS leasing schedule. The major ones concern the establishment of a revised leasing schedule, lack of resource and environmental information, competition in the leasing market, and shortages in resources available for exploration and development.

Establishing an accelerated lease schedule.

The initial task that must be faced in accelerating the leasing schedule is to determine what regions are most promising for oil and gas development. Historically, we have offered for sale OCS tracts only in the Gulf of Mexico and in the waters off the coasts of Washington, Oregon, and California. It is not clear that our current leasing schedule focuses the existing exploration and development activities on the very best prospective regions of the OCS. The tract selection system probably does select the most promising tracts in a given region, but we should modify the sale selection process so that we are sure we hold sales in the best regions.

The central problem in deciding on regional priorities is that large amounts of presently unavailable information are required on resource and environmental values. We recommend two measures to deal with this problem: an accelerated information program (discussed in the next section) and a new two-tier nomination system, which would include the following steps:

A request to producers to rank, in order of their preference, the regions in which new leasing should take place.

Using producers' rankings, available resource and environmental information, and the findings of an accelerated information program, identification of high priority regions and preparation of a regional leasing schedule.

A call for tract nominations within these regions, as is now done.

This two-tier nomination system has the following virtues:

It relieves Federal agencies of part of the burden of information gathering, by narrowing attention to priority regions based on industry nominations.

But within these priority regions, Federal judgment is exercised as to the balance of resource and environmental values, providing a check on the probable industry tendency to minimize the latter.

Resource and Environmental Information

In even the two-tier nomination system, requirements for information on resource and environmental values will be much greater under a 10-million-acre schedule which will involve frontier areas. Under the present OCS program, environmental impact statements do not consider alternate tracts or alternate areas, but under an accelerated program, it is likely that they will have to do so. Even if the courts do not require this, it should be incumbent on the Department to develop the information necessary to be reasonably sure that regions and tracts are chosen in such a way that the relationship of resource values to environmental costs is optimal. Problems with the MAFLA sale are an early warning of the need for this.

The details of the information required cannot now be specified. First rough estimates suggest that a five-year program totalling well over $200 million for GS and BLM may be necessary. At least four general types of data are required:

Geophysical and geological data on resource potential in new regions.

Baseline environmental data in new regions.

Tract evaluation data.

Measurements of the environmental impacts of exploration and development operations.

Design and costing-out of a specific information system, and a request for its funding, should be begun immediately if it is decided to accelerate leasing of the OCS. In this design effort, we recommend consideration of mandatory reporting of exploration and development data by companies. Such reporting is now required in other countries, and there is a reason to believe tht requiring it in the U.S. would not significantly reduce the amount of exploration effort. Making this information available to GS and BLM should substantially reduce the Federal costs of information collection.

Competition in the leasing market

If OCS leasing is accelerated merely by offering more tracts under the existing system, there will probably be a decrease in the average number of bids received on each tract. Furthermore, there are strong indications that the lower the number

of firms bidding on a tract, the lower the level of the winning bid. Recent OCS sales reveal a statistically significant relationship between the number of bidders and the ratio of the winning bid to the government's estimated value for a given tract. Thus, the government may not be receiving fair market value for those tracts receiving only one or two bids. (In the last three sales, approximately 25 percent of all tracts receiving bids received only a single bid.)

There are several steps that the government should take to increase competition under an accelerated OCS lease sale schedule.

Ban joint bidding by major producers.—In recent lease sales joint bidding among major oil producers has become a common practice. In the December 1973 sale, all of the 10 largest producers participated to some degree in bidding consortia with other majors. To the extent that the total number of bids on a tract is reduced by joint bidding, there will be a reduction in competition. A substantial increase in acreage leased per year is also likely to reduce the number of bids on some tracts. To mitigate the anticompetitive impact, we recommend that joint bidding between major producers be forbidden in the lease auction. By increasing the total number of bids, this action should reduce the percentage of single-bid tracts and increase the competition in the whole sale.

Speed up publication of basic geological and geophysical information.—The cost of gathering and interpreting geological and geophysical data is a major financial barrier which tends to inhibit participation by smaller oil and gas producers in OCS lease sales. More rapid publication of data would broaden the data base for all explorationists and should tend to increase the number of bidders in future sales, though it might discourage the collection of that data on the part of individual firms. If the information is valuable because it is secret, making it public, even after some delay, could destroy some of its value to the original collector. Nevertheless, we propose to modify existing regulations to require public disclosure of geological and geophysical data 2 years after a sale in the information area, or 10 years after the date of the data gathering permit, whichever comes *first*. Current regulations only require publication after 5 and 10 years respectively, whichever comes *last*. We believe that speeding up disclosure of basic data will increase participation in future lease sales without substantially curtailing the generation of such data.

Improve the bid rejection system.—On tracts which receive only one or a few bids, the main safeguard of fair market value is the bid rejection system, under which a tract is not sold unless the high bid exceeds a minimum acceptable amount. The present bid rejection system is admitted by GS and BLM to have serious problems, but GS currently is developing a new Range of Values method for evaluating tracts which should be a major improvement. We recommend increased efforts in developing this new method.

It has sometimes been suggested that tract-by-tract evaluation as the basis for bid rejection be replaced by a flat minimum bonus per acre. We recommend against this change. The flat minimum could have no relationship whatever to the actual fair market value of the tract, and since even under the present system relatively few bids were rejected, the flat bonus could contribute little or nothing to more rapid OCS development.

Shortages in equipment

In considering shortages in resources available for exploration and development it is important to distinguish between the availability of capital to finance these activities and the specialized equipment and personnel needed to carry them out. Projections by industry and financial institutions generally indicate that U.S. financial markets work very flexibly, and that needed liquid capital to finance increased OCS activity will be forthcoming, if that activity looks profitable.

A more serious problem is the availability of offshore drilling equipment and personnel. There is evidence of extensive rig-construction delays and a general nationwide shortage of steel pipe even under the existing rate of leasing. The shortage in steel pipe is at least in part due to domestic price controls which induce steel companies to produce other more profitable steel products and to export the pipe they do produce. Therefore, we recommend removing price controls on drilling supplies. Higher prices and wages will be necessary to attract additional resources into exploration and development of the acreage leased under an accelerated lease schedule.

Organizational changes within the Department

Management of the OCS leasing program is now shared by USGS and BLM. In broad terms, BLM is responsible for the lease sales and closely related management decisions, while GS is responsible for pre-sale information and post-sale

operational supervision. At key points in program cycle, GS and BLM reach decisions jointly.

There is a strong case for leaving this basic organization unchanged for the present:

The basic division of labor between GS and BLM takes advantage of the capabilities of each organization.

GS and BLM are accustomed to the necessary coordination, and while the joint management operation is not without its problems, it is broadly satisfactory in the sense that changes are not obvious that would clearly bring immediate improvements.

Any major organizational change now, even if it promised long-run advantages, would be disruptive in the short run. At a time when very rapid expansion of leasing is going on, it would be an error to disturb on-going arrangements.

We do, however, recommend that two positive organizational steps be taken:

To assure effective coordination during the period of rapid expansion to 10 million acres per year, an OCS Coordinator should be appointed in the Office of the Secretary to oversee the OCS operations of GS, BLM, the Office of Environmental Project Review, and the Office of the Solicitor.

To assure effective operation after the period of rapid expansion is complete, the Assistant Secretary for Management should be directed to recommend changes, if any, to be made in the organization of the OCS program after the 10 million acre leasing rate has been attained.

IV. FEDERAL ACTIONS CONSIDERED BUT NOT RECOMMENDED

We recommend against adopting four specific actions that have been suggested as possible improvements to the existing OCS leasing program.

Increasing the royalty level on OCS tracts

Raising the royalty rate for leased tracts could have several favorable impacts on the OCS leasing process. First, it would reduce the size of the initial cash bonus. This in turn might encourage bidding by small independent producers and it could make additional capital available to finance drilling. Second, a higher royalty would shift more of the risks of oil exploration and production from the lessee to the government. This shifting of risks could result in more Federal revenues (discounted over time) as a kind of insurance premium.

However, these favorable impacts of higher royalties would be nullified to the extent that ample capital is already available for development, and to the degree that firms can diversify against risk by spreading their exploration activity across a broad range of prospects.

Furthermore, an important problem with a higher royalty rate is that it will discourage bidding on marginal tracts. We estimate, for example, that in the December 1972 OCS sale a royalty rate of 50 percent instead of 16⅔ percent would have resulted in no bid for 56 of the 119 tracts which actually received bids. The higher royalty rate would have lowered the total initial bonus paid by nearly $800 million, but it would have left unsold leases on acreage whose expected value was estimated by the industry to be more than $340 million.

An associated problem with a high royalty rate is premature shutdown of a producing field. Shutdown will occur when the value of the oil produced in a given period, minus the necessary royalty, becomes less than the cost of production. Premature shutdown can be avoided by a royalty reduction procedure which will maintain production as long as the value of incremental production exceeds the costs of operation, but it is administratively difficult.

It is our conclusion that the potential costs of a higher royalty rate exceed its potential benefits, and we therefore do not recommend it.

Diligence requirements

It has been proposed that stricter diligence requirements be established for OCS leases to prevent speculation by lessees. We strongly recommend against any such requirements. First, the extremely high current spot prices for oil and gas make it unlikely that producers will withhold production in the expectation that future prices will be still higher. Second, rapid acceleration of the OCS leasing schedule will put considerable pressure on the existing supply of trained personnel and equipment for developing leased tracts. It is quite likely that the development of less promising areas will be delayed by shortages. Since one of the principal objectives of an accelerated leasing program is to focus available developmental resources on the most promising areas, it would be counter-productive to attach

diligence requirements to all leased tracts because it might force development of mediocre tracts and prevent rapid development of the best tracts.

"Checkerboarding" tracts across geological structures

It has been proposed that tracts be offered in a checkerboard pattern across geological structures to increase the information about the remaining tracts. We recommend against this proposal primarily because it would delay production. The delay occurs because unsold tracts covering portions of proven structures will have to be subsequently leased and at least partially explored before efficient production on the whole structure can begin.

If we had no prior geological or geophysical information about any of the land contained in a given lease sale, checkerboarding of tracts might be an efficient way to generate information about promising areas. Both industry and GS in fact use a kind of checkerboarding in getting initial geophysical data in frontier regions. But when there already is information available to identify and rank prospective structures in a sale area, checkerboarding accomplishes very little.

It is sometimes argued that checkerboarding tracts across structures would increase Treasury revenues because it would reduce the risk on subseqeuently leased tracts. This argument is weak because most bidders have already diversified against the exploration risk of any single OCS tract by spreading their exploration activities across a large number of prospects.

Even if checkerboarding were capable of increasing the value of the resources recovered from a given sale area, the large amount of acreage to be sold under the proposed accelerated leasing schedule would enable successful bidders to adopt on their own a checkerboard pattern in their exploration.

U.S. Department of the Interior,
Office of the Secretary,
Washington, D.C., January 17, 1974.

Memorandum

To: Larry Lynn.
Through: Bill Vogely.
From: Bill Moffat/Darius Gaskins.
Subject: Acceleration of OCS leasing.

In our initial paper proposing acceleration of OCS leasing to 10 million acres per year, we stated that it would be "bad public policy" to leave leasing at its present rate. We offered three reasons: a clear need for more oil, the promising outlook for finding more oil and gas on the OCS, and the evidence of high bonuses in recent sales.

It now appears that OMB may question going to 10 million acres on grounds that such a leasing rate is "too rapid," would bring forth "too much" oil, or might lead to "too many" inactive leases. We admit that arguing for one particular leasing rate as against another is very difficult, but we are nevertheless convinced that holding down the rate of leasing under present circumstances is unconscionable public policy, and that the risks of over-leasing are trivial compared to the risks of under-leasing.

If this question becomes important, as we think it may, we will need to expand on the arguments for a high leasing rate. The way to argue that case, as we see it, is attached.

Attachment.

The Case for Accelerated OCS Leasing

Objective of OCS leasing policy

Ideally, OCS leasing policy should be conducted in such a way that every structure is open to development the minute the available information indicates that the expected value of the oil exceeds the expected value of the cost (including environmental costs) of producing it. This ideal is unattainable, but it is important to keep it in mind as a standard.

The reason such a policy is ideal is that if value exceeds cost, society as a whole will be better off to produce the oil, because leaving it in the ground will leave national income lower than it need be. This does not mean, of course, that all oil should be taken from the ground immediately; attempting to do so would drive oil prices down and the prices of labor and materials up. Before the rate of production reached very high levels, the cost of producing additional oil would rise above its market value and proper policy would dictate leaving it in the ground.

The market, in other words, would enforce proper conservation. But on the other hand, ideal policy would not result in oil left in the ground if producing it looked profitable, since this would mean unnecessarily high oil prices, and reduction in real national income.

Current OCS leasing differs from this ideal policy in important ways:

Most OCS regions are not yet open to leasing at all, regardless of apparent profitability.

Current bonus bids are high enough to make it clear that at much higher leasing rates, oil could still be profitably produced.

The methods of choosing the leasing schedule give no assurance that the most promising areas are being leased and developed first.

These deficiencies suggest that three general changes should be made in leasing policy:

The rate of leasing should be increased.

The leasing schedule should offer the best areas first.

A strategy for information gathering should be developed which will permit identification of the best areas.

CONSEQUENCES OF ACCELERATED LEASING

1. *Accelerated development.*—Faster leasing will accelerate OCS development, and the output of oil and gas. However, there is a limit to the extent of this acceleration, since nothing forces companies to buy leases if, in their judgment, doing so would not be profitable. At some higher leasing rate, there would presumably be a drop in the proportion of tracts receiving bids, because the higher expected rate of development would lead to forecasts of lower oil and gas prices, higher development costs, or both. Forecasting the leasing rate at which this would occur is not possible, but there is no particular need to do so, since there are no unacceptable risks in simply continuing to lease at a very high rate until it does occur. It is on this basis that we suggest moving to a leasing rate of 10 million acres a year.

2. *Constraints on materials and manpower.*—The available capacity for exploration and development work is scaled to previous leasing rates, not to the higher ones we propose. This capacity cannot be increased overnight, of course, but it can be increased over a period of years. Two things are necessary: oil and gas prices high enough to make accelerated development profitable, and a lease schedule that permits accelerated development. If both conditions exist, the demand for equipment and manpower will rise, their prices and wages will go up, and more resources will flow into these activities. (This process will not work, of course, if controls keep down the prices of materials, which is the basis for our recommendation that the controls be removed.) The short way of saying this is that, with high oil and gas prices, and considering a period of more than 2 or 3 years, the leasing schedule will determine the availability of materials and manpower, not the other way around.

3. *Higher total lease bonuses, lower bonuses per acre.*—It is probable that accelerated leasing, while it will raise total bonuses, will reduce the average bonus bid per acre. The reduction in bonus per acre is not inevitable, because exploration in new regions may reveal richer pools than those now being leased—it is a fault of our present strategy that we do not have the information to tell whether this is the case. But overall, a per-acre reduction is likely. If it occurs, this could be a desirable signal, because it would indicate that we were moving closer to the ideal leasing rate, under which a pool would be leased immediately when oil prices and costs showed it to be even marginally profitable. On the other hand, average bonuses might drop for less benign reasons. Both logic and analysis of past sales suggest that for a tract of given value, the fewer the bidders, the lower the highest bid will be. Accelerated leasing should mean that more tracts receive a small number of bids, and hence there is a threat to the leasing goal of a return of fair value to the Treasury. This threat can be reduced by taking certain steps to maintain competition in the lease sale. Specific steps to stimulate competitive bidding include, a ban on joint bidding among major producers, more rapid disclosure of geological and geophysical information and the maintenance of a stringent system of determining minimum bids below which the lease will not be issued.

4. *Longer delays between leasing and production.*—Accelerated leasing will probably mean that development of some tracts will be delayed longer after the lease is issued than is true at present, especially during the first year or two of accelerated leasing. Such a delay has its favorable side; it is a consequence of more tracts being available at any one time on which to use available equipment and manpower, and it should result in allocation of the equipment only to the best tracts, which in itself will increase the efficiency of the overall development process. More fundamentally, though, it is important to remember that the delay we should be concerned with is the delay between the time when production becomes desirable (when value exceeds cost) and the time when oil begins to flow. Accelerated leasing will certainly reduce this delay, most of which occurs *before* leasing, as a result of too-slow a leasing schedule.

5. *Smaller "windfall" profits to lessees.*—Since accelerated leasing will tend, in general, to narrow the gap between oil prices and the costs of exploration and development, it will correspondingly reduce the average size of windfall profits to lessees from unexpectedly rich discoveries. There are windfall losses as well as gains, of course, and as long as leasing is fully competitive, they result from inability of bidders to predict accurately the presence of oil and gas. There is therefore no clear reason why such windfalls should be of concern to the Federal Government. But if they are of concern, accelerated leasing has the virtue of reducing their size.

Geological Description and Petroleum Potential of Selected OCS Frontier Areas

Although the United States continental shelf is extensive, oil and gas have been produced only on those portions adjacent to Louisiana, Texas, and southern California. The following pages give a brief physical description and petroleum resource estimate of the five frontier areas (areas that have been subjected to only limited exploration) of the Federally-owned Outer Continental Shelf that are being considered for possible oil and gas leasing in 1975. Of the five areas being considered, four have experienced no drilling at all. Therefore, the resource potential is only imperfectly known. Only a very small part of the fifth area (the southern California offshore) has been tested by drilling, which remains the only certain means for ascertaining the existence and extent of an area's oil and gas resources.

BALTIMORE CANYON

Description

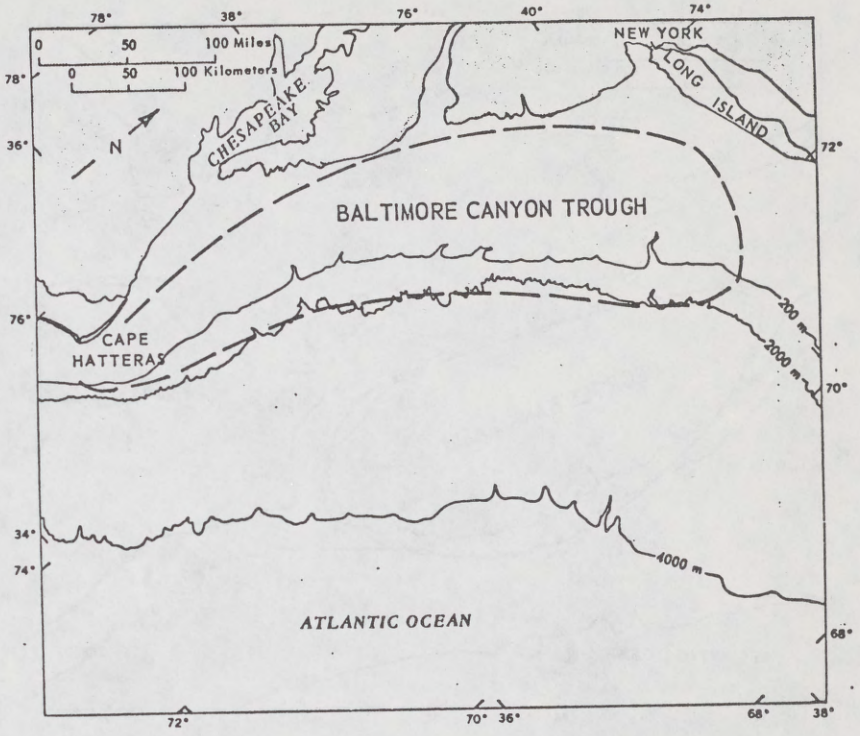
The principal geologic feature of the Mid-Atlantic OCS is the Baltimore Canyon Trough—so named for the defile cut into the subsurface continental slope offshore from Baltimore. The Trough is approximately 80 miles wide, underlies water depths of 60 to 6,000 feet, and extends from a point south of Long Island, New York to Cape Hatteras over a distance of some 450 miles. The axis of the Trough is approximately 60 miles offshore and is generally at the 200-foot water depth.

Sedimentary rock (the normal host rock of oil and gas) may exceed 40,000 feet in thickness in the deeper parts of the Trough. Sea bottom stability is considered average, and there are no known geologic hazards.

Potential Petroleum Resources

As much as 16 million acres of the Baltimore Canyon Trough may be considered favorable for oil and gas exploration. Like other portions of the Atlantic OCS, the Baltimore Canyon Trough has not been tested, and its petroleum potential is unknown. Based on volumetric determinations, however, it is possible that from 4 to 8 billion barrels of oil and 22 to 44 trillion cubic feet of gas might ultimately be found and recovered from Baltimore Canyon Trough.

Presently available data suggest that two areas within the Trough contain special promise: (1) the outer central portion, with an axis some 60 miles off the Delmarva coast, and (2) the northeastern sector centering about 60 miles south of Long Island and 60 miles east of New Jersey.



GEORGES BANK

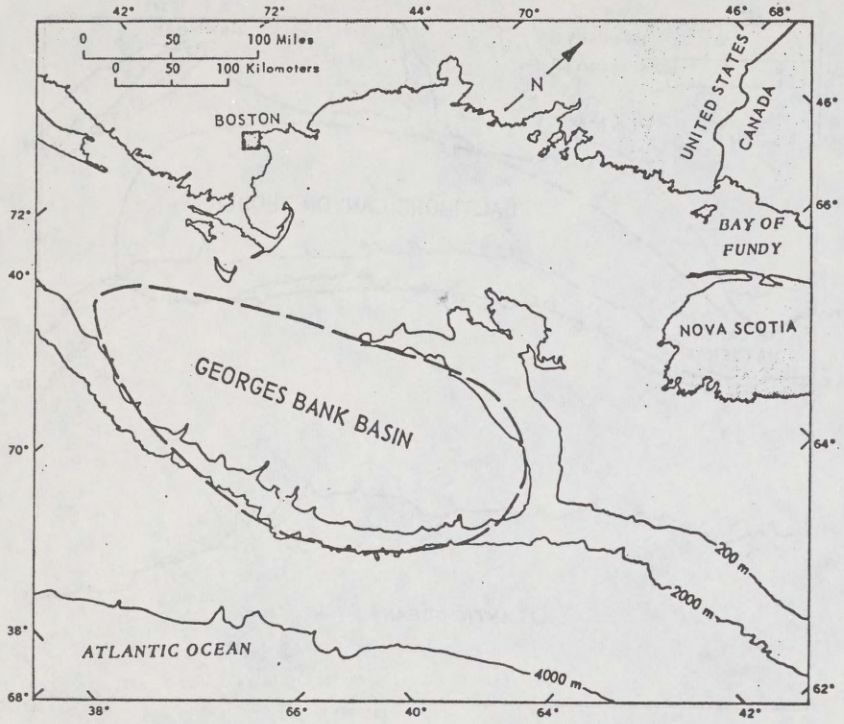
Description

The geology structure most favorable for petroleum offshore New England is the Georges Bank Basin which underlies the fishery area of the same name. The basin is approximately 75 miles wide and 300 miles long, and underlies water depths ranging from 120 to 6,000 feet. Its axis lies approximately 80 miles from Cape Cod. There are no known geologic hazards and sea bottom stability is considered average.

Potential Petroleum Resources

Georges Bank Basin includes an area of 12 million acres which are favorable to the occurrence of oil and gas. However, based on sediment thickness, area size, and other factors, a general estimate of 4 to 8 billion barrels of oil and 22 to 44 trillion cubic feet of gas might be discovered and produced from Georges Bank Basin.

On the basis of geophysical studies the central and south central portions of the basin centering about 125 miles southeast of Cape Cod appear to be of particular interest for oil and gas exploration.



SOUTHEAST GEORGIA EMBAYMENT AND THE BLAKE PLATEAU

Description

The South Atlantic OCS contains two major geological features which may contain petroleum: the Southeast Georgia Embayment and the Blake Plateau Trough.

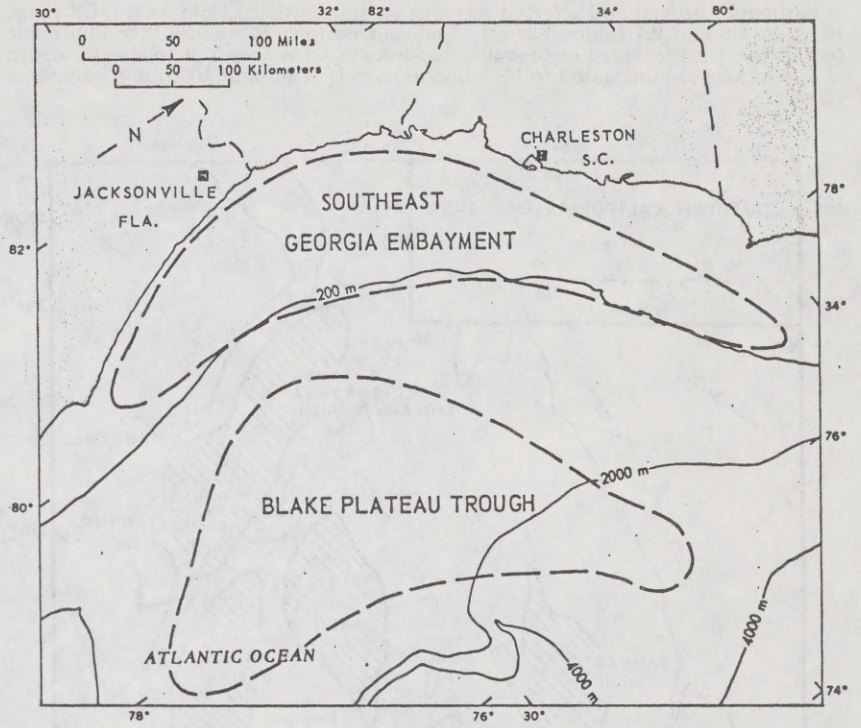
The Southeast Georgia Embayment lies 20 to 70 miles offshore in water depths of 60 to 600 feet, extending from the Carolinas to northern Florida. Its sedimentary deposits thicken to seaward. This area is relatively close by to a much deeper trough underlying the adjacent Blake Plateau, which lies 90 miles off Florida and 140 miles off Georgia and extends 150 miles to seaward. Water depths over the Blake Plateau Trough range from 600 to more than 6,000 feet.

Bottom stability in the South Atlantic Area is considered average.

Potential Petroleum Resources

Little is known about the petroleum potential and geology of this area, but data gathering is continuing. A general estimate of potential resources indicates that 2 to 4 billion barrels of oil and 11 to 22 trillion cubic feet of gas might ultimately be found and produced from the South Atlantic OCS.

The central and eastern central parts of the Southeast Georgia Embayment, lying some 75 miles off the Georgia coast, are considered on the basis of present knowledge to have good potential for oil and gas exploration and development.



SOUTHERN CALIFORNIA OFFSHORE

Description

The Southern California offshore area extends from Point Conception on the north to the Mexican border on the south, a distance of approximately 260 miles along the coast of southern California and reaches seaward about 150 miles.

The area contains several geologic features, the most familiar being the seaward extensions of the Los Angeles and Ventura Basins which are the sources of several prolific fields; e.g., Wilmington, Huntington Beach, Dos Cuadras, and Santa Ynez Unit. Other major prospective areas are the Santa Monica and San Pedro Basins, the Santa Rosa-Cortes Ridge area, and the Tanner Basin located west of San Clemente Island. Total thickness of sediments ranges 20,000 and 50,000 feet in the offshore Ventura Basin, but may be less in other southern California basins. Maximum thickness of reservoir rocks probably exceeds 2,000 feet.

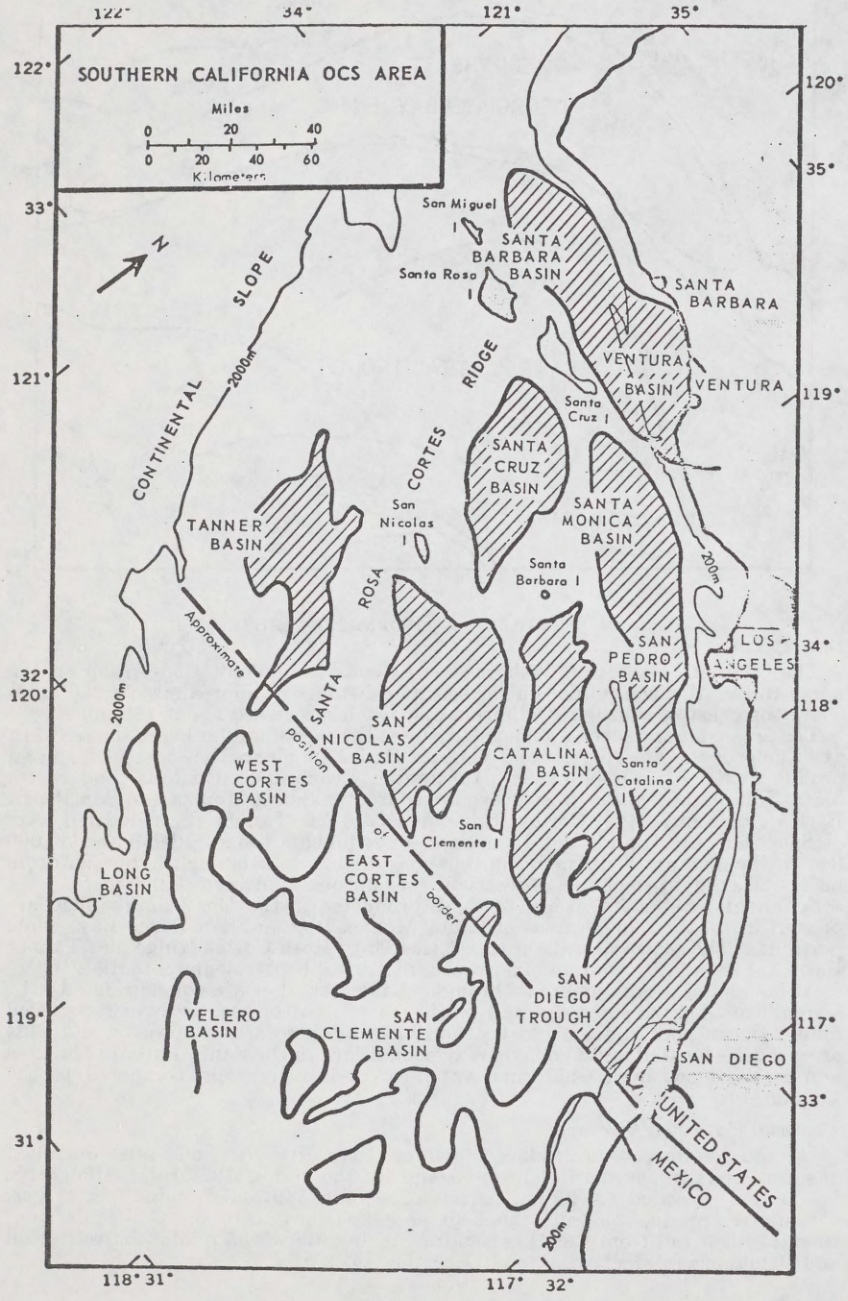
Sediments equivalent in age to those producing in the Dos Cuadras field are present in the near-shore areas of Santa Monica Bay and San Pedro Bay, while portions of the seaward basin areas off the Santa Rosa-Cortes Ridge and Tanner Basin are thought to contain older rocks with possible petroleum potential.

Although faults are numerous throughout the area, they are not considered to be a significant hazard since rigs and platforms will not be located over recognized faults. Ocean floor slides could be a problem in these areas; however, old slide areas can be located and avoided. Wave conditions in the Santa Barbara Channel and in most southern California waters are relatively calm compared to the Gulf of Mexico.

Potential Petroleum Resources

Oil and gas have been produced for more than fifty years on State-controlled offshore lands in southern California, and by the end of 1973 total cumulative production exceeded 1.4 billion barrels of oil and 540 billion cubic feet of gas. Cumulative production from the Federal (OCS) portion of the California Continental Shelf (all from the Dos Caudras field) totaled 105 million barrels of oil and 50 billion cubic feet of gas as of December 1973.

Estimated proved and inferred reserves on the southern California OCS range between 1.6 and 2.7 billion barrels of oil and between 2.4 and 4.8 trillion cubic feet of gas. Undiscovered recoverable resources in OCS areas out to a water depth of 200 meters are estimated to be 5 billion barrels of oil and 10 trillion cubic feet of gas.



GULF OF ALASKA

Description

The Gulf of Alaska Basin includes an offshore area of about 50,000 square miles underlain by thick sediments, and extending seaward from the shore to a distance of 50 to 100 miles. Water depths in the basin range from less than 60 feet to more than 6,000 feet.

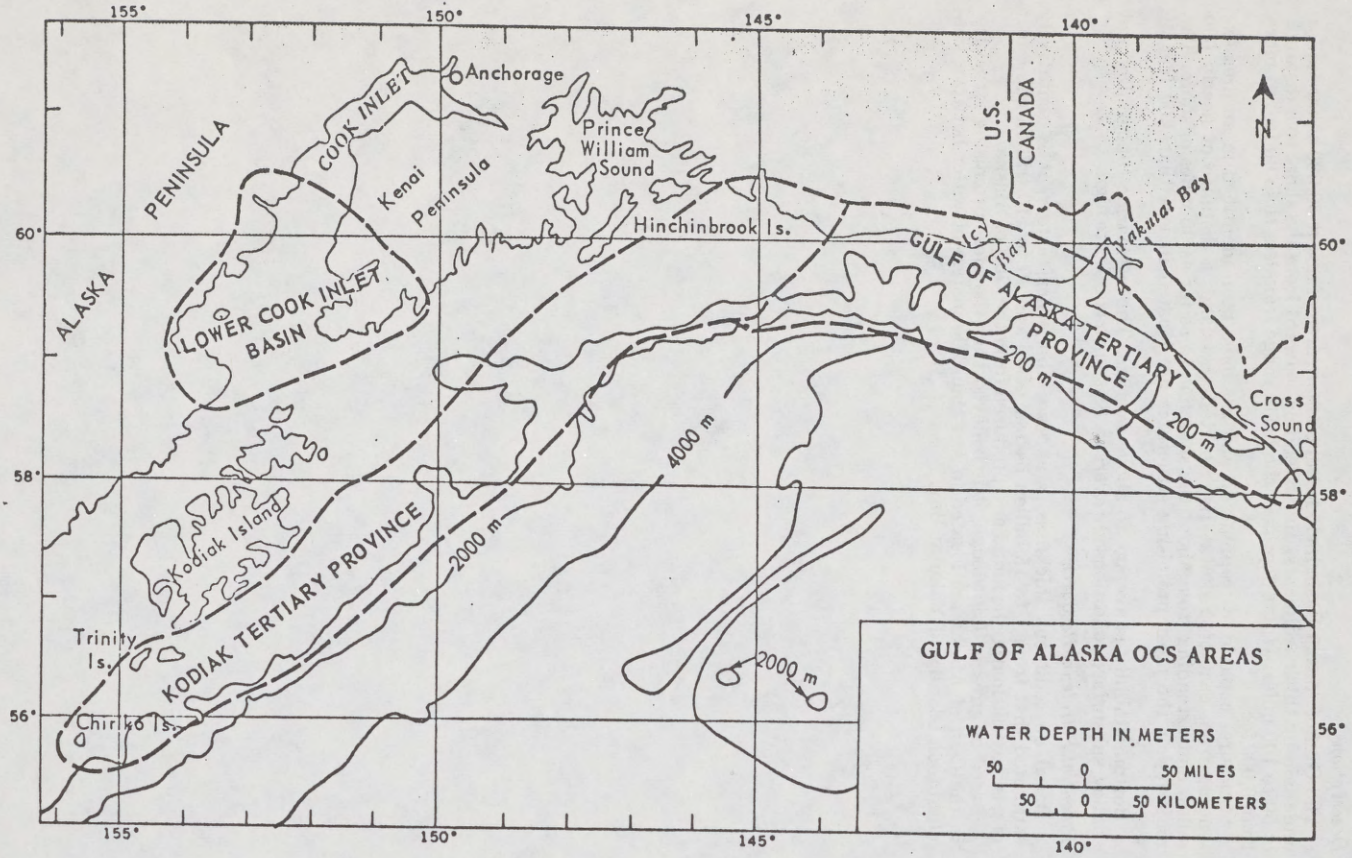
Structures capable of trapping oil and gas have been identified in an area extending from east of Yakutat Bay to Kodiak Island, a distance of nearly 600 miles, and extending from about the shoreline to as far as 90 miles offshore. The majority of the most promising structures are located in less than 600 feet of water.

Bottom stability is average to above average. The submarine topography and shallow subsurface conditions are average. Seismic hazards are high.

Potential Petroleum Resources

Based on sediment thickness, area size, and other factors, it is tentatively estimated that from 7 to 15 billion barrels of oil and 49 to 110 trillion cubic feet of gas may ultimately be found and produced from the Gulf of Alaska.

Based on present knowledge, it is believed that the most promising structures in the Gulf of Alaska are located in less than 200 meters of water between Hinchinbrook Island and Yakutat Bay.


155°
150°
145°
140°
60°
58°
56°
Anchorage
COOK INLET
PENINSULA
Kenai Peninsula
Prince William Sound
Hinchinbrook Is.
U.S.
CANADA
ALASKA
LOWER COOK INLET BASIN
GULF OF ALASKA TERTIARY PROVINCE
Yakutat Bay
Icy Bay
200 m
Cross Sound
4000 m
2000 m
Kodiak Island
KODIAK TERTIARY PROVINCE
Trinity Is.
Chirikof Is.
GULF OF ALASKA OCS AREAS
WATER DEPTH IN METERS
50 0 50 MILES
50 0 50 KILOMETERS
N

Acceleration of Outer Continental Shelf Leasing

"Technical Paper"

I. EXPANDED OCS LEASING'S ROLE IN A COMPREHENSIVE ENERGY STRATEGY FOR THE UNITED STATES

A question has been raised as to the appropriate role for the offshore to play in meeting our nation's energy requirements. Also information has been requested on the relationship of potential offshore production to total reserves and to our total future energy mix.

A. Overview

The petroleum and natural gas resource potential of the United States equals 200 to 400 billion barrels of oil and 1,000 to 2,000 trillion cubic feet of natural gas. Of these amounts, 32.5% of the oil is attributable to the offshore and 39.5% of the natural gas. The acreage in our accelerated program is expected to contain 8.4 to 16.5 billion barrels of oil and 38.4 to 77.8 trillion cubic feet of natural gas. In terms of 1985 production this would mean 2 to 3 million barrels per day of oil and 10 to 19 billion cubic feet of natural gas per day.

We are unable to determine at this time the exact contribution these resources will make to our total domestic energy picture. Projections as to what our energy mix will be in future years are currently being finalized in connection with Project Independence.

Imports of petroleum in 1973 amounted to 2.264 billion barrels. At current world oil prices, this amount of oil costs $23 billion to import. Even if dependence on foreign sources of oil involved no potential international ramifications, the U.S. would still not want to import $23 billion worth of oil, if some or all of this oil could be produced domestically for less cost. Preliminary reports from the Project Independence task force indicate that in all likelihood domestic oil and gas operations will need to be increased and this increase will need to come from accelerated leasing on the OCS.

It is evident that OCS oil can be produced for considerably less than the current world price of oil. The recent high bonus prices of OCS leases are one indication that OCS oil can be produced for far less than the value of the oil obtained. Not only is this true of leases currently being sold in the Gulf of Mexico, but it also appears to be true in most if not all of the frontier OCS areas where future leasing will take place.

The Department has made some initial estimates of the transportation and extraction costs per barrel for oil from four OCS frontier areas. These estimates range from about $1.50 for the Atlantic to $3.50 for the Gulf of Alaska. At the current world price of about $10 per barrel, OCS production in these frontier areas is clearly much cheaper than the price of imported oil.

The importation of this high cost petroleum continues to have inflationary effects. In simple terms, the importation of oil requires that sooner or later real resources must be exported to foreign countries to pay for oil imports. The resulting increased export demand for U.S. products will tend to raise domestic prices of these products for American consumers. With domestic OSC oil production costing far less than the price being charged for imported oil, there is every reason to move rapidly to develop this domestic energy resource. Since 1954, the Department has leased to private developers almost 10 million acres on the OCS. This is only a small percentage, however of the potentially productive acreage remaining to be leased. Thus, an accelerated leasing program offers great potential for increased OCS oil production at a tremendous cost savings over oil imports.

In addition to oil imports, other energy alternatives have been analyzed. However, despite the possibility of alternative sources, there is no combination that will relieve us in the near future from our dependency on foreign imports. If we can produce offshore oil and gas at less cost to our economy than imported oil, it is essential that we proceed with the acceleration of this program.

B. Alternatives to Accelerated OCS Leasing

1. *Reduce Energy Demand.*—Lowering domestic energy demand could possibly obviate the need for rapidly accelerating the rate of OCS leasing. In the past the American people have cut back their demand for energy when asked to do so. However, voluntary conservation by the consumer usually continues only as long as the "crisis" lasts. In the long run, voluntary conservation alone cannot be depended on to significantly reduce energy use unless conservation is cost effective.

There are some indications that reduced energy demand can be realized with minimum negative results. One such sign is the popular endorsement of zero population growth. Limiting the number of potential energy consumers is a sure method for keeping growth in energy demand low. Additionally, recent efforts by the industrial sector of the economy in conjunction with the Department of Commerce have shown that curtailed energy demand can be achieved without adverse effects on productivity or output. It should also be noted that if mass transit continues to substitute for the automobile and the airplane then effective energy demand will be reduced and real energy savings can occur.

Rate of introduction of energy conservation will depend largely on Government policies, removal of institutional constraints, promotion of incentives and regulations to induce conservation and investment in more efficient plants and processes. Rates of retirement of existing structures, equipment, etc. and its replacement by more energy efficient elements, and prices of energy sources can also be used to promote energy conservation.

In the residential-commercial sector, the most promising conservation options are increased building insulation and an increased awareness by consumers of energy alternatives in housing construction and appliance choice. Options in industry are more recycling of energy intensive materials, use of energy saving materials in manufacturing and construction, and investment in energy saving processes and equipment. In transportation, increased auto efficiency is a promising short term option. In the longer term, conservation could be effected by a reversal of the trend to less energy efficient modes of transport.

The prospect of reduced energy demand, however, does not warrant forgoing our plans for the OCS. Energy demand is directly related to lifestyle. Unless tremendous increases in energy efficiency can be demonstrated, reduce demand may correspond with a lowered standard of living.

2. *Increasing Onshore Production.*—Increasing onshore production is not an alternative to accelerated OCS production—all available domestic sources will have to be drawn on to reduce dependence on foreign sources.

According to the Project Independence Blueprint Interagency Oil Task Force, and to many other recent analyses by academic institutions and industry, domestic oil production will continue to decline for a few years, even though the stimulus of high prices has already accelerated exploration. High prices will also stimulate secondary and tertiary recovery, but even new onshore exploration and increased secondary and tertiary discovery together will not prevent continued decline in onshore production in the contiguous states. According to the Oil Task Force analysis, acceleration of OCS leasing would make possible a cessation of production decline and an increase in total production by 1980. In the maximum production possibility estimates for 1985, about 25 percent of the total would come from the OCS and about 25 percent from Northern Alaska. Of the production from other sources, some 60 percent would be the product of seondary and tertiary recovery.

3. *Increase Nuclear Power.*—Installed nuclear capacity in the United States is presently 25,000 MW. Nuclear generators were producing 5 percent of the nation's electricity by the end of last year and almost half of the electric power capacity under construction involves atomic energy. The number of 1000 MW nuclear plants needed to replace the oil and gas from offering 10 million acres for lease varies depending upon whether the oil and gas is used directly for end uses such as home heating or whether it is used to power the generators for electricity. For the "electricity only" case, complete nuclear substitution would mean constructing between 486 and 972, 1,000 MW nuclear generating stations. For the "end uses" examples, this would necessitate adding between 756 and 1,620 nuclear generators to our current supply. Since OCS oil is used for generating electricity as well as end uses, we estimate that to completely substitute nuclear power for the energy produced through offering 10 million acres, from 600 to 1,300, 1,000 MW nuclear power plants would be required. It is doubtful that nuclear power could be accelerated to that extent by 1985 because environmental and licensing considerations are generally prolonging the average lead time of 10 years. In addition, nuclear power cannot fully substitute for the transportation and petrochemical uses of petroleum.

4. *Increased Use of Coal.*—The energy shortfalls of recent months have increased interest in coal, our most abundant energy resource. It is estimated that between 1.2 and 2.4 billion tons of coal per year would have to be produced to replace the annual hydrocarbon production from the offering of 10 million acres. If this additional coal were provided by surface mining, then 215–480 mines of five million short tons annual capacity would be needed. A single mine of this size would employ about 600 persons and have capital cost of $40 million.

If, on the other hand, underground mines were used, 600–1200 mines would be needed. Manpower for a single mine would be 1,700 workers and capital expenditures would range from 11–23 million dollars. Again, complete substitutions of coal would not be practical, however, in areas such as the transportation sector which relies heavily on petroleum. The transportation sector currently accounts for approximately 53% of total petroleum consumption.

Coal extraction can have numerous environmental impacts such as reduction in air quality, lowering the quality of our surface and ground waters due to acid mine drainage, decreasing land quality due to strip mining, and subsidence resulting from underground mining; however, as in other activities that man engages in, these impacts need not result in a degradation of our natural environment. Both the technology as well as State and Federal regulations exist for the purpose of protecting our environment at the same time that our coal resources are being mined. The mining community too recognizes the need to extract this much needed fossil fuel in a responsible manner, and they are moving forward in both research and responsible mining techniques.

II. DETERMINANTS OF EXPANDED OCS LEASING'S FEASIBILITY

Concern has arisen over industry's ability to epeditiously develop the 10 million acres scheduled to be leased in CY 75. The following discussion focuses on projected availability of the capital, equipment, and manpower required by this undertaking. The Department's monitoring of these variables is a continuous effort and updated information will be provided to the Committee as it is obtained.

A. Background

The availability of sufficient quantities of exploration and construction equipment is crucial to rapid OCS development. Current shortages in drilling pipe and in onshore and offshore rigs may affect accelerated development of the OCS if the situation does not improve. Production platforms and skilled labor are also in short supply. Present supply difficulties stem largely from steel shortages that developed under price controls. Much of the technical equipment used on the OCS is fashioned from steel, specifically tubular steel whose low profitability induced curtailed output during the price control years. Eliminating price controls have helped and will continue to help correct this problem. Thus the broad outlook for equipment availability over the next five to six years is favorable. Persistent spot shortages will be inhibitory in effect. However, the probability that these shortfalls will develop is not sufficient to warrant modifying our proposed objectives.

Expected Rig Availability for OCS Drilling

During 1971 and 1972, scheduled wildcat OCS leasing was delayed for environmental reasons. This caused a shift of oil company interest to foreign offshore areas where high potential leases were available and as a result, 13 mobile drilling rigs were moved to foreign waters—primarily the North Sea. The availability of leases and the success of foreign drilling have caused North Sea operations to more than double in the past year.

The resumption of leasing in the Gulf of Mexico in late 1972 provided sufficient quality tracts to encourage exploration, thus seven rigs (a 10 percent increase) have been added to OCS drilling. One unit has already returned from the North Sea and another may follow soon.

Industry representatives indicate that with a dependable, accelerated leasing program, including attractive prospects in new frontier areas, they will either keep newly constructed rigs here or return U.S. registered rigs from overseas. It is their best guess, based upon historical patterns of rig movements to better prospects, that 10 percent or more of the rigs estimated for foreign operations could be available for OCS drilling. Therefore, in response to an accelerated leasing schedule, a reasonable estimate of the number of foreign operating rigs that would be available for OCS drilling would be 10 percent of the 259 rigs available for foreign offshore drilling in 1975. Probably the maximum case would be to divert 25 percent of the rigs to U.S. operations. The 10 percent figure nearly could be achieved by retaining for OCS drilling those U.S. constructed rigs to be completed in the remainder of 1974 and 1975 which are now contracted for foreign use.

44-827 O - 75 - 12

If 10 percent of the rigs projected for foreign service were made available for U.S. drilling, it would increase the U.S. rig count by 26 (or a projected total of 126) by the end of 1975. If 25 percent were diverted from foreign service, 65 units would be added, bringing the projected total to 165 rigs.

Over 85 percent of the foreign operating rigs are capable of deepwater drilling and most are of the type required for drilling in the Atlantic and off California. Many of the units are considered acceptable for Gulf of Alaska drilling under most weather conditions.

These estimates show the possible range of increase in domestic rig availability that can occur in one year. The above range would not be realistic unless the worldwide rig population proved to be highly mobile with a tendency to concentrate in highly prospective frontier areas, characteristics that have been confirmed by past experience. Given this mobility and the prospective nature of the OCS we foresee that rig distribution will readily acclimate itself to the demands of accelerated leasing.

B. Offshore Drilling Rigs

As of September 1974, 68 drilling rigs were operating in U.S. waters. Of this number, eight are presently classified as idle—three off Louisiana, two off Texas and three off the Pacific coast. Idle rigs include those available for contract, those moving between areas or those undergoing major repair. Among the seven rigs added to the total U.S. supply since April 1972, only one is known to have been returned to American waters from foreign operations. One more rig is tentatively scheduled to be returned to U.S. waters from the North Sea.

At the present time, 48 drilling rigs are under construction in domestic shipyards. Nineteen of the rigs are of the semisubmersible type while 16 are of the jackup variety. The thirteen remaining rigs are drillships. Taken together these 48 rigs amount to 37% of current total world construction. By the end of this year 12 of these rigs should be completed and ready for operation while calendar year 1975 should witness the completion of 17 more rigs. The 19 remaining rigs should be finished in 1976 or later.

The 48 rigs presently being constructed represent the present ceiling on rig construction capacity in the United States. Testimony at recent FEA hearings indicated that rig-building capacity could be expanded by 20 percent, but a three year lag between order and delivery for rigs exists today.

The operating capabilities of drilling rigs is another factor that affects the domestic supply-demand situation. Many of the rigs operating in the Gulf of Mexico, where most current domestic offshore oil and gas drilling occurs, will not be capable of working in deepwater regions although they will be operable in the Mid-Atlantic. Thus Gulf of Mexico rigs can be transferred domestically as offshore Gulf of Mexico reserves are exhausted.

As of April 1974, 31 rigs available in U.S. waters were limited to drilling in water depths of less than 100 feet and of this number 14 could not operate in waters over 50 feet. The National Petroleum Council interim report on rig availability shows that by the end of 1974, an expected 84 rigs will be available for U.S. offshore drilling. Of this number, 52 will be capable of operating in water depths over 100 feet, but only 21 will drill in water over 300 feet. The report forecasts that by the end of 1976, the total U.S. rig count may reach 119 units if all rigs now in U.S. waters will remain and all units under construction and not now committed overseas can be retained in the United States.

C. Steel Pipe, Drilling Muds and Bits, Wire Rope, Production Platforms, and other Essential Equipment

Tight supplies of essential equipment are a direct consequence of the Economic Stabilization Program. Price controls motivated the steel industry to concentrate on producing high profit items while neglecting low profit goods. Tubular steel products are low profit items. Today's shortages in essential equipment thus reflect steel industry strategy during the era of price controls. Shortages do not demonstrate inadequate capacity or inability to keep pace with expanded OCS development. Moreover, as price increases begin to reflect true demand there will be a positive impact on supply. Thus, despite current difficulties the outlook for the next five years is good. Shortages should be erased early next year and subsequent supplies will be adequate.

Presently, tubular steel goods such as pipes, tubings, and casings are in short supply. Independent operators have felt the impacts of these shortages most severely. Most of these shortages arose during the Economic Stabilization Program when the steel industry devoted less effort to the production of low profit items such as tubular goods. Recent devaluations of the dollar, encouraging tubular goods exports and limiting their import have also curtailed the availability of these materials.

The scarcity of drill pipe, tubing, and casing has become more critical in the past eight months, causing cutbacks in drilling plans for majors and independents alike. Exxon expects to fall 20% short of its drilling targets in 1974 unless there is an improvement in supplies. Another major producer on the Gulf Coast will be able to purchase only enough casing for 30–35% of this year's planned wells. Steel mills and distributors are allocating the available tubular goods based on a percentage of previous years' purchases.

In case of the drill pipe, there is the additional problem of the lack of facilities for welding tool joints to the drill pipe. Waiting time for new orders of drill pipe has increased to two years.

Drill bits, benefiting from ample productive capacity and an insignificant steel requirement, have not caused any supply problems. Supplies of drill muds, on the other hand, fluctuate with the availability of their petrochemical constituents. Drilling muds are now available but the situation could change quickly. Some of the component chemicals used in producing drilling muds are already being allocated.

Wire rope is in scarce supply, again due to critical shortages of steel. On January 1, 1973, it was an "off the shelf" item; by January 1, 1974, there was a waiting period to two years. Production platforms are also in short supply. Platform components, especially steel, are in short supply and the utilization rate of current productive capacity is almost 100%. The lead time for a platform is currently between 12 and 18 months.

D. Manpower

The skilled labor necessary in developing the OCS is in somewhat restricted supply at the present time, though there has been an improvement in the situation over the past few months. The major problem seems to be rig and service and supply boat crews. Skilled laborers usually require from six to 24 months training to develop the necessary competence. (Some of the more specialized skills are subject to licensing by the Coast Guard and other agencies.) It is expected that improved wage conditions for skilled labor will accompany expanded OCS leasing. This development will attract the manpower needed for efficient offshore operations. Thus, the outlook in this area is also promising.

E. Ancillary Industries

There are a number of other support industries that are critical to the goal of expeditious OCS development. The sophisticated equipment that is required to extract the hydrocarbons and then channel these resources to land, demands highly specialized maintenance and service. Our shipbuilding industry is likewise essential since ocean vessels are involved in almost every phase of OCS operations. Finally, the health of the steel industry and successful OCS development are closely related. These are a few major examples of the many sectors of our economy that are involved directly or indirectly with OCS activity.

A survey of industry publications reveals that the service and supply industry is presently sound. Small shipyard capacity exists so that the vessels that are needed for these tasks can be supplied without problem. The relatively small size of service craft minimizes potential competition with the shipyards devoted to rig and major ship construction.

Major vessel shipyards are working at or near capacity worldwide. Yards in the United States are also heavily committed to the requirements of naval construction. The Shipbuilders Council of America estimates the backlog in the U.S. at $6.5 billion dollars worth of orders. Domestic shipyards are faced with the problems of capacity and obtaining steel for contract orders. The industry has spent $500 million on expansion in the last five years, and plans to spend another $500 million in the next few years.

Steel investment has recently begun to expand. One estimate is that something on the order of $2 billion a year will be necessary to meet expected requirements.

While no serious labor problems are expected there is a possibility for maintenance shutdowns in the near future. The plants have been running at capacity for some time.

F. Capital

The capital position of OCS participants, both major and independent, is excellent. In 1973, the oil industry accumulated unprecedented profits. This year's profit outlook is just as promising. In addition to these high profit levels, there exists additional evidence of the industry's financial strength. Mobil Oil Corporation, for instance, is currently purchasing a controlling interest in Marcor Corporation, a major merchandising firm. This move is expected to cost Mobil in the vicinity of $500 million. Mobil, a vigorous OCS participant, plans to make this purchase in cash. Other major OCS participants, Gulf Oil Corporation, for example, have also revealed diversification plans similar in nature and expense to Mobil's. In terms of the major companies, the money is available if attractive prospects are offered for lease.

Fiscal vitality is not limited to the major oil firms. Independent oil companies, bidding individually and jointly with other independents or majors, are winning continually increasing percentages of the leases offered at OCS sales. In the December 1973 OCS sale, independent—bidding within singly or with each other—produced 9% of the total high bids. In the March and May 1974 sales the respective figures were 32.4% and 48%. If consortia between majors and independents are included the respective percentages for the three sales are 58.6, 72.8, and 90.1. Despite this success, capital assembly is considerably more difficult for the small independent than it is for the major vertically-integrated firm. As a result, the Department will test royalty bidding on October 16, 1974. In addition, banning joint bidding among the major oil firms in order to promote competition and improve the bidding position of the small independent firm, is currently being considered.

Today, an OCS lease is generally considered one of the best investments available in any market. Thus industrial giants like General Motors have expressed their intention to invest in OCS property as well as utility suppliers. Other industrial investors have demonstrated similar enthusiasm for OCS lease purchases. A second encouraging sign is the innovative financial arrangements that have arisen recently, increasing the number of participants at OCS lease sales. One of the independent oil companies, for instance, recently became a very significant purchaser of OCS leases by raising capital through a unique sale of equity interests in OCS leases. Partnership ventures between industrial oil and gas consumers and exploration and production companies are another example of innovative participatory arrangements designed to improve a bidder's chances for lease acquisition. These joint ventures obtain ownership interests in, or first call on, oil and gas reserves discovered by the organizations in which they participate.

It has been estimated that the oil and gas industry will expend 7.8 billion dollars in capital investments during the year 1974, a 42% advance over comparable expenditures in 1973. This increase exceeds the mean rise of 18% in 1974 capital outlays projected for all United States industry. In addition, the petroleum industry is expected to surpass all other industries in terms of size of increase in capital spending between 1974 and 1973. It is predicted that 75–80% of the $7.8 billion capital outlay will be directed into exploration increases or production-expanding activity.

The industry's accessibility to capital funds in the short-term appears relatively secure. Capital spending was accelerated without difficulty by 4% between 1972 and 1973 and the projected advance between the 1973 and 1974 levels has not been lowered because of foreseeable constraints on capital availability. Also noteworthy was the record-setting $2.1 billion expended in the March 1974 OCS lease sale. The industry's second quarter capital appropriations—the authorizations to spend money before actually placing orders—increased by 125% over first quarter appropriations.

For the 16 year period, 1970–1985, the Chase Manhattan Bank estimates that the oil industry will require $1.35 trillion for capital expenses. This estimate, computed from 1973 data, represents a 35% increase over similar projections based on 1972 data.

WORLDWIDE OIL CAPITAL NEEDS FOR 1970–85

[In billions of dollars]

	Estimates made in 1973	Estimates made in 1972
Areas of spending:		
Exploration production	450	265
Plant and facilities	360	335
Financing	540	400
Total	1,350	1,000
Sources of funds:		
Borrowing, equity, capital recovery	695	735
Profits	655	265
Total	1,350	1,000

Source: Chase Manhattan Bank. The Oil and Gas Journal; Apr. 1, 1974; p. 56.

As shown in the above table, the anticipated proportional contribution of the various sources of capital formation has also been revised. The 1972 forecast has external sources (borrowing and equity funding) plus capital recovery accounting for 73.5% of the industry profits. The revised 1973 projection envisions almost a 50–50 split in the contribution of each category of capital. This change means that the responsibility of profits to future capital formation is increased by a magnitude of 390 million dollars. Chase Manhattan provides no explanation for increasing the relative burden attributable to profits in the 1973-based forecast. However, if profits are to fulfill this geometrically increased responsibility, then they will have to grow at an average annual rate of 18%, more than double the 8% growth rate in profits achieved during the 1955–1970 interval.

If, however, the relative proportional contribution of each source had been consistently maintained for both the 1972 and the 1973 projections, then the expected input to capital formation by profits would be 364 billion dollars, 291 billion dollars less than the 655 figure generated by the 1973 scheme. This is demonstrated in the following table.

WORLDWIDE OIL CAPITAL NEEDS FOR 1970–85

[In billions of dollars]

	Estimates made in [1] 1973	Estimates made in 1972
Sources of funds:		
Borrowing, equity, capital recovery	986	735
Profits	364	265
Total	1,350	1,000

[1] Estimates maintaining relative proportions of 1972 estimates.

Even if the extreme case does materialize, oil industry profitability should be sufficient to meet the challenge of expanded OCS leasing. One index of oil industry profitability, return on stockholders' equity, increased by 55% between the first and fourth quarters of 1973. This trend indicates that the oil industry is financially sound, and thus quite capable of undertaking capital-intensive ventures like the OCS.

III. INSURING RAPID EXPLORATION AND DEVELOPMENT FOR OCS LEASING UNDER AN EXPANDED PROGRAM

The Committee has asked for assurances that there be expeditious development of the OCS leases. What follows is a discussion of the Department's efforts in this area.

A. Overview

Section 8 of the Outer Continental Shelf Lands Act states that an oil and gas lease shall be for a period of five years and as long thereafter as oil and gas may be

produced from the area in paying quantities, or drilling or well reworking operations as approved by the Secretary are conducted thereon.

If a producible well is awaiting installation of transportation or other essential facilities, then the lease is extended beyond the primary five year term. Also if drilling has commenced the lease will be extended to determine if production can be established. Therefore, the lease for any tract on which oil and/or gas is discovered and developed remains in force until production ceases. Conversely, if the tract covered by the lease is barren or if development is not undertaken, then the lease expires after five years. Development plans for all OCS tracts must be approved by the U.S. Geological Survey.

There is concern that expanded OCS development will encourage speculation, i.e. lessees will delay development in the hope that potential price increases will make deferred production more profitable than expeditious production.

Studies by the Geological Survey indicate that purposefully delayed production has not occurred in the Gulf of Mexico in the past. To guarantee that future production is not delayed, we are actively monitoring OCS production.

The Department had given careful consideration to the possibility of imposing stricter diligence requirements (i.e. a shorter primary term and fewer extensions) upon OCS leases. A Federal Register Notice was published on July 5, 1974, requesting industry's and the public's views on maximizing oil and gas production on the OCS. In the past two arguments were recognized in rejecting stricter diligence requirements. First oil and gas prices have been of a level that should preclude speculation. Second, acceleration of OCS leasing will put some pressure on the supply of trained personnel and equipment. Under current guidelines, lessees may develop the most promising tracts while postponing activity on marginal tracts. Since our goal is to maximize OCS production, diligence requirements, by forcing development of mediocre tracts first, might be counter-productive. The entire issue of diligence requirements, is still under review.

In order to determine the effectiveness of our current procedures if we lease in frontier areas, a report is now being prepared by the Solicitor's Office of the Department of the Interior, the Geological Survey, and the Bureau of Land Management, which will address the following issues:

(*a*) Will existing lease terms create serious problems for any company trying to develop leases in the frontier areas?

(*b*) Which lease terms can be changed within the authority of the existing OCS Lands Act to solve these problems?

(*c*) Which lease terms will require changes in the OCS Lands Act?

B. Proposed Geological and Geophysical Data Regulations

In order to increase the government's and public access to data concerning OCS resources and environmental conditions, the Department in May 1974 proposed for comment some new rules regarding the submittal to the government and public disclosure of geological and geophysical data. Availability of this data is expected to improve resource evaluations, to increase awareness of environmental conditions, and to increase competition for certain lease tracts.

To simplify, the rules proposed in May 1974 would require that (1) all lessees and all future exploration permittees make available to the government within 30 days all geophysical and geological data collected on the OCS, (2) all exploration permit data concerning tracts that are leased would be made publicly available 60 days after the tracts were sold or would be made publicly available 10 years after collection if the area was not sold, and (3) all data collected on a leased tract would be made publicly available 60 days after collection. Public hearings were held on July 15 and 16. The comments, predominately from industry spokesmen, have criticized the proposed rules basically (a) as being confiscatory, (b) as leading to a reduced demand for data and hence financial ruin for data collection companies, and (c) as discouraging R&D in data collection and interpretation.

The Department believes there is basic merit in increasing government and public access to this data to some extent over the existing conditions and that the benefits will exceed the suggested costs. A revised set of proposed "submittal and disclosure" rules presently are being drafted that will take into consideration the comments to the May 16th proposal. These revised proposed rules are expected to be published later in October.

IV. EFFECTIVE MANAGEMENT OF AN EXPANDED PROGRAM

There has been interest in the Department's plans to deal with the management problems that might develop from an expanded OCS program. The strategies

for dealing with possible inefficiencies and diseconomics of scale in three areas are discussed elsewhere in this paper. The solutions to managerial problems in the area of timely resource development are discussed in Section I, *Expanded OCS Leasing's Role in a Comprehensive Energy Strategy for the United States,* and in Section III, *Insuring Rapid Exploration and Development for OCS Leasing Under an Expanded Program.* Section V, *Efforts to Assure Receipt of Fair Market Value Under an Expanded Program,* outlines the Department's efforts to confront potential managerial bottlenecks in the fair market value area. Insuring administrative efficiency in the realm of environmental protection is discussed in Section VI, *Protecting the Environment Under an Expanded OCS Program.*

In all of the major areas of administrative and management concern—environmental assessment and mitigation, resource valuation, and supervision of drilling and production operations—the Department has the expertise and capability to execute the program. However we are not content to rest on our present level of capability. We are seeking improvement through more careful attention to environmental baseline studies and analyses and public participation in the environmental process. We have implemented more effective and stringent regulations and OCS orders to ensure efficient use of the oil and gas resources and improved protection of the environment from major or minor spills. We are also improving our ability to ensure a fair market value for resources leased.

V. GUARANTEEING RECEIPT OF FAIR MARKET VALUE UNDER AN EXPANDED PROGRAM

The Committee has asked for assurances that the prices for the leases reflect fair market and a fair return to the Government.

A. Overview

The fair market value of OCS properties is difficult to estimate. Most of the difficulty arises from the uncertainty which exists about the actual amount of oil and gas reserves contained in any given lease. Given this uncertainty, the fair market value of a lease must be derived from estimates of oil and gas reserves based on available geophysical and geologic information about the lease. For any given lease, most of the variations among lease valuations assigned by different bidders and the government arise from differences in the interpretation of available information; company bidding philosophy and internal company needs. Because of these factors, there will continue to be wide variations in lease valuations assigned to the same lease by different evaluators.

B. Maintaining a Competitive Environment Under an Expanded Program

Concern has been expressed over the impact that a continuous offering of large sales will have on receipt of fair market value. In order to help alleviate this concern the Department has taken steps to supplement free market forces. These include a strong bid evaluation procedure, the testing of royalty bidding at our next OCS lease sale, the consideration of banning majors from bidding jointly, the initiation of a two-tier nomination system and the continuous monitoring of availability of capital, equipment and manpower necessary for offshore development which has been discussed under Section II. We also after each sale review the results to see if there have been any changes in the competitive climate.

1. *Bid Evaluation Procedure.*—Prior to a sale, both government and industry estimate the present value of the tracts to be offered. The Interior Department currently employs Monte Carlo simulation techniques to derive a range of values (R.O.V.) for each tract, with the mean of the range representing the resource value of the tract. In calculating the resource values, Geological Survey is responsible for collecting and analyzing geologic, geophysical and engineering data and for evaluating the tracts. The Bureau of Land Management, in consultation with the Department, provides Geological Survey with the prices of oil and gas and the discount factor to be used in the evaluation. Exhibit I describes in detail how the R–O–V concept is implemented and provides a computer printout for a sample tract valuation.

After the bids have been submitted, the Bureau of Land Management prepares a post-sale matrix which summarizes and highlights the critical data on each tract included in the sale. The purpose of the matrix is to guarantee consistency in the decision and to provide a permanent record of each factor that influences the final decision. See Exhibit II for a sample matrix.

Since the inception of the R–O–V method of evaluation an average of 18% of high bids submitted at general sales have been rejected on grounds of inadequacy. The bid evaluation procedure is continually under review in order to help ensure we are receiving fair market value.

2. *Royalty Bidding Experiment.*—Under Section 8 of the Outer Continental Shelf Lands Act of August 7, 1953, (67 Stat. 462; 43 USC Secs. 1331–1343), the Secretary is authorized to issue oil and gas leases only on a competitive basis as follows:

(1) Sealed bids on the basis of the highest cash bonus with fixed royalty; or
(2) Sealed bids on the basis of highest royalty with a fixed cash bonus.

Only option 1 has been used to date. On October 16, 1974, we plan to offer 10 tracts on a royalty bid basis. The argument in favor of royalty bidding has been that it relieves the burden of the high front end cost associated with bonus bidding thereby increasing competition and allowing the Government to share a greater portion of the risk. Problems associated with royalty bidding are premature abandonment, lack of incentive to proceed with development and the greater chance of less responsible parties acquiring leases. Provisions have been designed to help alleviate these possibilities but only the execution of the experiment will permit a true analysis of this bidding method. The provisions provide for limiting company profits to a 12% rate of return over their direct costs in the event of a royalty reduction along with compulsory unitization of reservoirs containing a royalty tract. The fixed bonus has also been set at $25 an acre in order to help preclude speculators from participating.

3. *Two-Tier Nomination System.*—Prior to the preparation of a draft statement on the 10 million acre proposal the two-tier system was initiated. The first tier of the system was implemented on February 20, 1974, when the *Federal Register* carried a request for comments from the Department of the Interior to members of the oil and gas industry as well as to environmental groups and the general public. The information requested from the industry included the following: (1) a ranking of the 17 OCS areas by order of oil and gas potential (2) outlines of geologic structures occurring in areas of interest shown on appropriate maps and (3) estimated time intervals required to achieve initial and peak production after a positive discovery, and identification of factors impeding development. The information requested concerning environmental factors included: (1) ranking according to environmental concern (2) indications of specific environmental hazards to be considered and (3) specific actions which may be taken to reduce or eliminate potential conflicts with oil and gas exploration and development activities.

The Department's Bureau of Land Management received 63 replies to the request of February 20. On June 5, 1974 the Department released its *Report on the Responses Received in Reply to the Request For Comments on Potential Future Outer Continental Shelf Oil and Gas Leasing* which summarized and highlighted the details of the various responses.

The second part of the two-tier system is the call for nominations of specific tracts prior to each sale. This system is used along with other inhouse data in determining which tracts are to be considered in the environmental impact statement and which tracts are offered for lease.

Each of these steps are undertaken in an effort to ensure that we are offering attractive prospects for sale which should enhance the competitive climate.

4. The Department is studying a proposal to ban joint bidding among major oil companies with world oil reserve holdings in excess of five billion barrels. This is being done in order to see if such an action would increase competition between the major oil companies. A public hearing was held on June 25, 1974 and comments were received through July 31, 1974. The majority of comments were from industry, but some were received from other Federal Government agencies. Some legal and economic objections to the draft amendment were raised. They are being considered in an effort to decide whether or not to publish rulemaking.

VI. PROTECTING THE ENVIRONMENT UNDER AN EXPANDED OCS PROGRAM

The Committee has asked for assurances that the environmental impact of proposed OCS leasing actions be carefully and fully assessed.

A. Overview

The environmental impacts of proposed OCS leasing are carefully considered before any leases are issued. In addition to information from the two-tier nomination process, the Bureau of Land Management requests interested Federal agencies—including EPA, NOAA, GS and the Fish and Wildlife Service—to prepare reports describing valuable natural resources contained within the general areas of a possible lease sale, and the potential effect of mineral operations upon the resources or upon the total environment. Environmental data is also developed

through a baseline study program. All of the data (which is discussed in detail in a later section) will be used in determining which tracts should or should not be included in proposed offering because of environmental hazards.

A draft programmatic statement to assess the impacts of accelerating OCS oil and gas leasing to 10 million acres is being prepared. The statement assesses the relative impacts of leasing in 17 OCS areas. A public hearing will be held on the draft statement. A final statement will be filed with the CEQ following analysis of all comments received. Individual statements will be prepared for each OCS oil and gas lease sale tentatively identified.

B. Proposed Supervisory Procedures for OCS Resource Development

Once a tentative list of tracts in a given OCS area is selected and announced to the public, the Bureau of Land Management prepares a draft and final environmental impact statement. Federal agencies and coastal States which may be affected by the proposed action are notified and requested to provide inputs into the drafting of the environmental impact statement.

Multi-disciplinary staffs (including oceanographers, marine biologists, and land use planners) both in the OCS field offices and in Washington write the comprehensive texts which comprise the enviornmental impact statement. The impact of the proposed leasing action is analyzed on a tract-by-tract basis. The draft statement is filed with the Council on Environmental Quality and 30 days later a public hearing is held in the locale where the proposed sale is scheduled to occur. The public is requested to provide comments either orally or in writing on the proposal and its potential impacts.

As a result of the comments received, the draft statement is revised, any unresolvable conflicts are presented, and special stipulations are recommended on all or some leases if it is considered necessary to mitigate any adverse impacts. Among the types of special stiputations placed in leases in the recent past to mitigate adverse environmental effects are:

(1) requirements that oil clean-up containment equipment be on site within a specified timeframe—the basis for this stipulation is an analysis of winds and currents of the area which would indicate how fast a spill could reach the shoreline;

(2) requirements that the number of platforms on a lease be kept to a minimum in order to minimize interference with commercial fishing operations;

(3) requirements that pipelines bringing the oil and gas to shore be placed in designated areas which are the least environmentally hazardous.

These types of stipulations have been applied to leases in the Gulf of Mexico. As frontier areas are opened for leasing the results of the OCS baseline and monitoring studies program will aid in the development of new stipulations for these areas.

The Geological Survey maintains a vigorous enforcement program for these orders and regulations. GS maintains a list of potential items of non-compliance and enforcement action which affect OCS lessees. Enforcement action is nondiscretionary and a list of such violations will be made available shortly. Drilling and production inspections are made and reports are made on the state of compliance of the lessees.

On March 1, 1974, a new procedure on inspection frequency was initiated for OCS leases. It requires all major platforms (six or more completions) to be inspected at least once every six months and all minor platforms (5 or less completions) to be inspected at least every 15 months. These inspections are not conducted according to a predetermined schedule—all OCS operations are subject to inspection at any time without prior notice. There are some cases, as in "unmanned platforms", when the lessee or operator has to be notified of an inspection in order to have personnel available when the GS inspectors arrive. Otherwise, a great deal of time is lost. In these instances, advance notice is given only to the extent to insure that company personnel are present during the inspection. Other inspections are announced in that the company will notify the GS when a platform is ready to commence production and requests an inspection by Survey. However, these constitute only about 10% of the total inspections. During the first five months of 1974, 388 drilling rig inspections and 695 production platform inspections were made in the Gulf of Mexico. As a result of these inspections, 1,374 enforcement actions were taken.

In the event of an oil spill, clean-up and containment equipment is required to be available on site within a specified time frame. OCS Order No. 7 which deals with the requirements will be modified as appropriate for any new operational areas in coordination with the appropriate agencies having expertise or authority.

If an operator is unable to deal with the adverse consequences of a spill, the Government can step in and clean up the oil under the Regional or National Oil and Hazardous Substances Pollution Contingency Plan. Subsequently, the lessee would be billed for the cost incurred.

C. Related Management and Supervisory Authorities

As a result of various laws passed by the Congress, OCS operations must comply with additional stipulations designed to protect the environment. Legislation in this category includes the Coastal Zone Management Act, the Federal Water Pollution Control Act, the Land and Water Conservation Act, and the Endangered Species Act.

D. Environmental Data Gathering Programs

The Department has initiated an environmental research program on the Outer Continental Shelf to provide general and specific data needed to ascertain the short and long term effects of the development of offshore oil and gas resources on the surrounding marine environment. Basically, there are three types of studies being conducted on a contract basis: (1) literature surveys of specific regions of the OCS to determine available environmental and socio-economic data and identify data gaps. At the present time, literature surveys are nearing completion for OCS areas offshore S. California, the North Atlantic, the S. Atlantic, the Mid-Atlantic and the Gulf of Alaska; (2) field surveys to obtain specific information as critical data are identified in the literature reviews; and (3) baseline and monitoring studies to gather oceanographic, geologic, and biological data in areas of proposed leasing and subsequently to monitor the effects of oil and gas development on the marine environment.

In fiscal year 1975, baseline studies will be initiated offshore South Texas, Southern California, in the Gulf of Alaska, offshore Atlantic. Baseline studies will be continued offshore Mississippi, Alabama, and Florida in the areas leased in the December 1973 sale. The aim of this program is to establish preoperational benchmark data on those critical parameters in the OCS environment which may be used in later monitoring to watch for effects of oil and gas development activities. Future monitoring will be done on a continuing basis to detect environmental hazards to insure compliance with existing regulations and/or to lead to the promulgation of additional regulations to protect the environment. Some of the parameters are: background levels of hydrocarbons and trace metals in the water sediments and organisms and characterization and standard oceanographic measurements (i.e. salinity, temperature). The need for additional basic marine biological research on such subjects as adaptation of organisms to oil and toxic metal exposure also is being considered.

E. OCS Research Advisory Board

The OCS Research Advisory Board was created in accordance with the authority of the Federal Advisory Committee Act (Public Law 92–463). This Board, whose charter was issued March 20, 1974, advises the Assistant Secretary—Land and Water Resources, the Bureau of Land Management and other offices of the Department, in designing and implementing environmental studies related to OCS oil and gas development. It is expected that the Board will function for the duration of the OCS environmental baseline research and monitoring program, a period of approximately ten years. The Board is composed of various representatives of Interior Department agencies, EPA, NOAA, and representatives from the coastal OCS states. The Board meets at least bi-annually and reports directly to the Assistant Secretary—Land and Water Resources.

Exhibit I

Evaluation Procedures

1. For lease sale tract selection purposes Survey geophysicists make a preliminary interpretation of the data and prepare a travel time-structure-contour map to determine the most prospective structures. These data and maps are used, at this stage, for both environmental impact assessments and statements.

Following the final tract selections, which are the "localized" areas to be evaluated for potential resources, detailed geophysical interpretations and maps are prepared.

2. Using the detailed geophysical maps and reports, geologists redraw the maps on depth (instead of travel time) and, with the aid of stratigraphers and paleontologists, prepare maps showing reservoir thicknesses. This requires knowledge of all related geology from trends, stratigraphy, and palenotology.

3. Petroleum engineers use the maps and accompanying data to determine the acre-feet of potential hydrocarbon bearing reservoir. Many factors concerning reservoir mechanisms and characteristics are determined from the nearest exploratory and producing wells and comparable producing fields. Hydrocarbon recovery factors are estimated from these data and potential resources are estimated. These estimates are, for the purpose of lease sales, considered to be "estimated recoverable reserves" and treated accordingly to determine presale values. Using many factors such as exploratory well costs, operating costs, price of products, rate of return on invested capital, etc., the present worth value of each tract is determined by a discounted cash flow calculation. A risk or probability of success factor is applied and the resulting figure is adjusted for condemnation or dry hole costs.

4. For the December 1972, and later OCS sales, the formerly used discounted cash flow method was expanded into a new technique called the Range of Values method by the Survey and which has proven merit in scientific applications where there is great uncertainty.

The most probable outcome or result of a series of interrelated factors or events, each of which is unknown or uncertain, is predicted by a random selection of values for each factor, based on the laws of probability.

The Range of Values computer program developed by USGS determines a value for each OCS tract using the discounted cash flow method, but instead of considering just the most reasonable estimate of each significant parameter, the program considers *all* reasonable estimates. As an example, USGS scientists may agree that the *most* reasonable estimate of the thickness of an oil-bearing sand is 100 feet. They may also agree that the sand may very well be only 20 feet thick. but that it might be as much as 200 feet thick. The computer program randomly selects a number between 20 and 200. Other critical parameters such as permeability of sand, cost of drilling, etc., are handled in a similar manner, and using these randomly selected values for the factors a value is computed for the tract. The process is repeated 500 times and 500 different values are obtained and plotted by computer on a histogram and bar graph. Thus, for each tract a range of values is obtained. The probability of each value occurring is also printed in percentiles. The most probable or expected value can be visually determined quickly. Results derived from Survey evaluations are furnished to BLM for use in their "Decision Making Matrix" and following the lease sale GS personnel meet with appropriate BLM personnel and advise of the Survey's recommendations for tract acceptance and rejection furnishing technical expertise as required.

Input Data

PROSPECT AND TRACT

Structure depth, feet—8,500.
Water depth, feet—350.
Pressure gradient, PSI/ft—0.4650.
Temperature gradient, F/ft—0.0100.
Tract size—5000.
Development cost (overrides built in value), $—0.
Yearly operating costs (overrides built in value), $—0.
Number of expendable wells—2.
Fraction of individual completions that will be duals—0.300.
Number of platforms—2.
Platform drilling cost (overrides built-in value)—0.
Expendable well drilling cost (overrides built-in value)—0.
Fraction of completed wells on platforms 1, 2, 3, 4—0.500, 0.500, 0, and 0.
Fractional development costs, year 1—0.3000.
Fractional development costs, year 2—0.4000.
Fractional development costs, year 3—0.3000.
Fractional development costs, year 4—0.0.
Day hole risk—0.300.

Card I.D.	Minimum	Maximum	Most probable
Acre	1,737.000	1,991.000	1,884.00
Pajb	0	0	0
Lifg	10.000	25.000	20.000
Lifo	0	0	0
Thic	30.000	80.000	50.000
Pord	0	0	0
Sw	0	0	0
Bd	0	0	0
Recd	0	0	0
Rlcg	1,420.000	1,950.000	1,775.000
Z Fa	0	0	0
Dil (R)	0	0	0
Gas (R)	2,000.000	6,000.000	4,000.000
Inte	0.110	0.150	0.130
Dela	3.000	4.000	3.500
Frac	0	0	0
Gdb	0	0	0
Yiel	3.000	10.000	5.000
Oil (dollars)	5.500	7.500	6.500
Gas (dollars)	0.550	0.750	0.650
Tax	0.100	0.190	0.130
Ebcg	0	0	0
Escd	0	0	0
Oper	1.300	1.500	1.400
Opub	1.200	1.600	1.300

Note: Gas recovery is in mcf/acft.

Evaluation of the Most Probable Case (No Risk)

Productive acres—1884.
Oil AC–FT/total AC–FT—0.
Pay—50.
Porosity—0.
Water saturation—0.
Oil formation volume factor—0.
Oil recovery (either fraction or STB/ACFT)—0.
Gas recovery (either fraction or MCF/ACFT)—1775.
Z factor—0.
STED/well—0.
MCFPD/well—4000.
Discount rate–0.1300.
Delay time—3.50.
Fraction produced before oil decline—0.
Gas oil ratio—0.
Initial oil value—6.50.
Initial gas value—0.65.
Tax rate—0.100.
Gas escalation per year—0.
Oil escalation per year—0.
Yield—5.
Calculated gas life—19.
Number of gas streams—6.
Gas reserves—167204992.
Gas rate per year—8760000.
Number of oil streams—0.
Oil reserves—0.
Oil rate per year—0.
Calculated oil life—11.
Number of dual wells—0.
Number of single wells—6.
Number of platforms—2.
Yearly operating cost—306432.
Development cost—6787510.
Present worth—17399200.

[In millions of dollars]

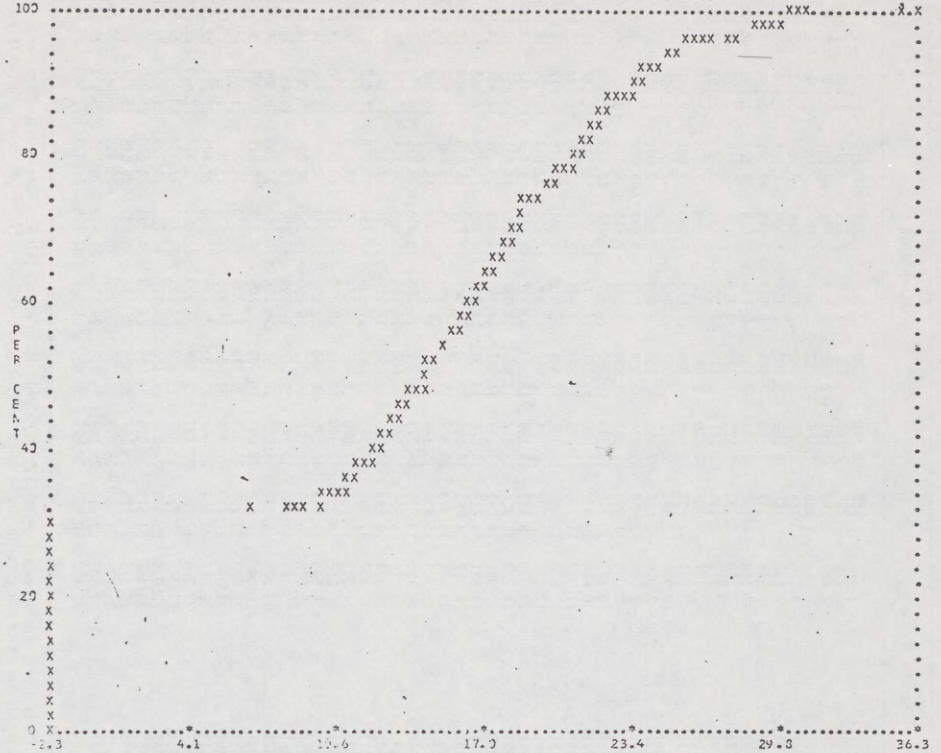
Sample	Present worth									
1	−2.292	−2.288	−2.281	−2.270	−2.269	−2.261	−2.259	−2.258	−2.250	−2.236
11	−2.233	−2.227	−2.226	−2.225	−2.220	−2.216	−2.215	−2.210	−2.203	−2.199
21	−2.199	−2.199	−2.199	−2.198	−2.193	−2.191	−2.191	−2.190	−2.189	−2.189
31	−2.189	−2.188	−2.184	−2.182	−2.181	−2.181	−2.180	−2.180	−2.179	−2.179
41	−2.176	−2.168	−2.168	−2.168	−2.168	−2.166	−2.166	−2.165	−2.164	−2.162
51	−2.162	−2.161	−2.160	−2.160	−2.159	−2.159	−2.158	−2.155	−2.152	−2.150
61	−2.148	−2.147	−2.146	−2.144	−2.143	−2.143	−2.141	−2.139	−2.138	−2.138
71	−2.138	−2.136	−2.134	−2.131	−2.130	−2.129	−2.127	−2.126	−2.126	−2.125
81	−2.124	−2.123	−2.121	−2.119	−2.119	−2.118	−2.118	−2.118	−2.117	−2.116
91	−2.115	−2.115	−2.111	−2.110	−2.109	−2.104	−2.103	−2.103	−2.102	−2.102
101	−2.101	−2.101	−2.100	−2.098	−2.096	−2.096	−2.096	−2.095	−2.094	−2.094
111	−2.094	−2.093	−2.090	−2.089	−2.087	−2.086	−2.085	−2.081	−2.079	−2.076
121	−2.074	−2.073	−2.072	−2.067	−2.066	−2.065	−2.063	−2.062	−2.060	−2.058
131	−2.058	−2.056	−2.056	−2.055	−2.053	−2.052	−2.051	−2.047	−2.044	−2.039
141	−2.036	−2.034	−2.034	−2.034	−2.031	−2.031	−2.028	−2.025	−2.022	−2.018
151	−2.005	−1.999	−1.983	−1.980	7.242	8.650	9.140	9.486	9.577	10.112
161	10.127	10.275	10.333	10.352	10.422	10.455	10.529	10.558	10.614	10.793
171	10.814	10.877	11.076	11.241	11.290	11.394	11.523	11.524	11.541	11.604
181	11.607	11.716	11.773	11.828	11.928	12.011	12.045	12.144	12.299	12.309
191	12.338	12.366	12.401	12.441	12.518	12.541	12.546	12.577	12.603	12.653
201	12.672	12.706	12.734	12.820	12.820	12.871	12.914	13.025	13.046	13.094
211	13.096	13.120	13.138	13.179	13.315	13.416	13.437	13.442	13.698	13.707
221	13.722	13.724	13.817	13.821	13.832	13.835	13.881	13.891	13.936	13.988
231	13.991	14.061	14.117	14.142	14.199	14.345	14.433	14.464	14.520	14.577
241	14.581	14.616	14.663	14.631	14.688	14.729	14.784	14.808	14.811	14.834
251	14.857	14.881	14.954	15.009	15.044	15.059	15.070	15.204	15.240	15.276
261	15.333	15.373	15.389	15.443	15.459	15.465	15.492	15.563	15.578	15.634
271	15.706	15.724	15.734	15.784	15.892	16.063	16.077	16.101	16.151	16.154
281	16.199	16.236	16.275	16.292	16.298	16.315	16.320	16.330	16.516	16.523
291	16.527	16.566	16.575	16.608	16.616	16.645	16.718	16.721	16.779	16.845
301	16.934	16.987	17.036	17.094	17.119	17.124	17.125	17.170	17.281	17.334
311	17.397	17.399	17.562	17.655	17.699	17.730	17.829	17.832	17.855	17.867
321	17.909	17.968	17.980	18.025	18.034	18.072	18.075	18.115	18.200	18.219
331	18.258	18.298	18.346	18.349	18.357	18.371	18.389	18.420	18.483	18.499
341	18.535	18.569	18.570	18.571	18.651	18.724	18.774	18.806	18.861	18.877
351	19.012	19.019	19.026	19.037	19.050	19.052	19.064	19.068	19.071	19.098
361	19.184	19.206	19.225	19.240	19.299	19.307	19.400	19.453	19.815	19.983
371	19.922	19.928	19.983	20.965	20.198	20.283	20.299	20.369	20.374	20.446
381	20.540	20.616	20.667	20.793	20.805	20.812	20.819	20.901	20.927	20.928
391	21.483	21.238	21.317	21.323	21.337	21.370	21.374	21.545	21.560	21.665
401	21.674	21.710	21.776	21.806	21.885	21.937	21.950	21.974	22.002	22.012
411	22.012	22.044	22.068	22.102	22.145	22.150	22.185	22.211	22.241	22.293
421	22.319	22.324	22.437	22.517	22.553	22.604	22.614	22.620	22.624	22.640
431	22.746	22.797	22.837	22.852	22.963	23.256	23.342	23.470	23.649	23.868
441	23.935	23.940	24.041	24.104	24.117	24.227	24.228	24.255	24.321	24.351
451	24.451	24.513	24.516	24.655	24.693	24.894	24.850	25.010	25.016	25.016
461	25.113	25.115	25.157	25.404	25.514	25.531	25.635	25.717	25.718	25.744
471	25.779	25.864	26.017	26.200	26.297	26.387	26.461	26.581	26.750	26.763
481	27.208	27.614	28.559	28.713	29.513	29.539	29.767	29.932	29.984	30.048
491	30.130	30.504	30.622	30.661	31.064	31.276	31.473	31.983	36.087	36.272

Note: Mean value of present worth=$12,190,932; std dev of mean=$470,636; mean value with tax write-off=$13,458,-259; present worth using most probable values of variables (unrisked)=$17,399,200; mean value in reserves (from 500 trials).

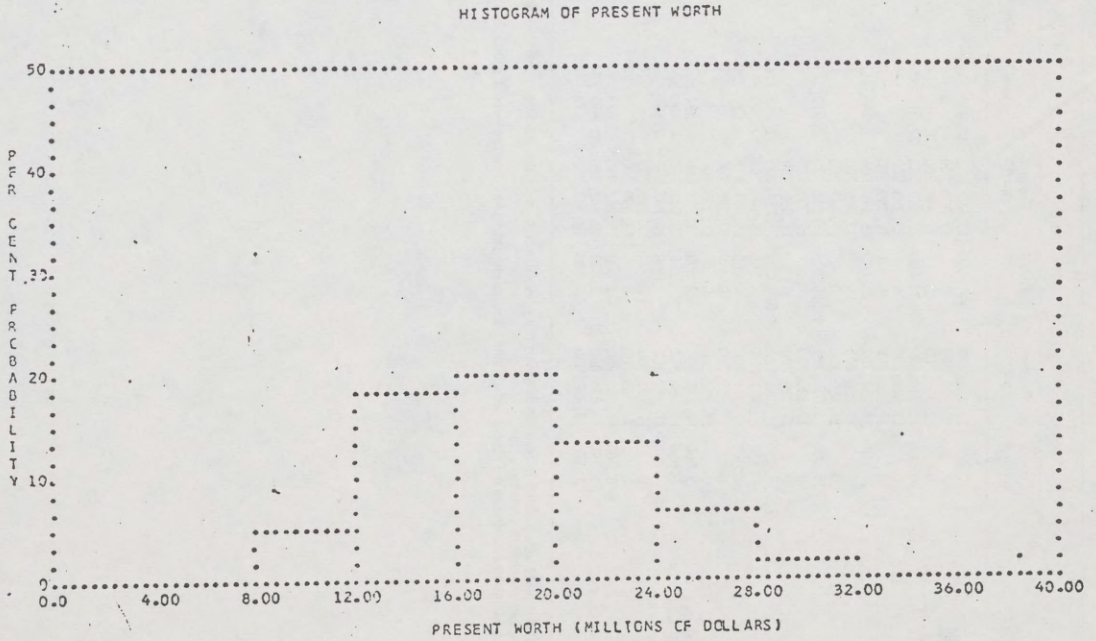
BLOCK

PLOT OF CUMULATIVE DISTRIBUTION FREQUENCY

(NOTE - Y AXIS REPRESENTS THE PROBABILITY THAT THE PRESENT WORTH OF THE LEASE IS LESS THAN OR EQUAL TO THE INDICATED VALUE OF PRESENT WORTH.)



BLOCK



NOTE-THERE IS A 0.308 PROBABILITY OF THE PRESENT WORTH BEING NEGATIVE.

SENSITIVITY ANALYSIS—BLOCK

Variable	Minimum		Maximum		Spread [1]	Percent variation [2]	
	Variable value	Present worth	Variable value	Present worth		Minimum	Maximum
Acre	1,737.000	$14,755,473	1,991.000	$17,687,872	$2,932,399	15.2	1.7
Prob	0	17,399,200	0	17,399,200	0	0	0
Lifo	0	17,399,200	0	17,399,200	0	0	0
Thio	30.000	10,740,757	80.000	27,816,768	17,076,000	38.3	59.9
Pero	0	17,399,200	0	17,399,200	0	0	0
Sw	0	17,399,200	0	17,399,200	0	0	0
Lifg	10.000	24,256,752	25.000	15,110,595	9,146,157	39.4	13.2
Bo	0	17,399,200	0	17,399,200	0	0	0
Rico	0	17,399,200	0	17,399,200	0	0	0
Recg	1,420.000	14,030,181	1,950.000	17,943,328	3,913,147	19.4	3.1
Zfa	0	17,399,200	0	17,399,200	0	0	0
Cil(R)	0	17,399,200	0	17,399,200	0	0	0
Gas(R)	2,000.000	11,694,622	6,000.000	19,334,800	7,640,178	32.8	11.1
Inte	.110	21,437,656	.150	14,196,293	7,240,763	23.2	18.4
Dlla	3.000	17,074,400	4.000	15,031,610	2,042,790	1.9	13.6
Fpac	0	17,399,200	0	17,399,200	0	0	0
Gor	0	17,399,200	0	17,399,200	0	0	0
Cil (dollars)	5.500	17,236,800	7.500	17,561,600	324,800	.9	.9
Gas (dollars)	.550	14,151,082	.750	20,647,296	6,496,214	18.7	18.7
Tax	.100	18,194,992	.190	15,807,586	2,387,406	4.6	9.1
Escg	0	17,399,200	0	17,399,200	0	0	0
Esco	0	17,399,200	0	17,399,200	0	0	0
Yiel	1.200	17,836,080	1.400	16,962,336	873,744	2.5	2.5
Oper	1.200	17,836,080	1.400	16,962,336	873,744	2.5	2.5
Devf	1.200	17,836,080	1.400	16,962,336	873,744	2.5	2.5

[1] Spread: Absolute value of the difference between the present worth using the minimum variable value and the present worth using the maximum variable value.

[2] Percent variation (minimum): Present worth using the minimum variable value—most probable value/most probable value.

LEASE EVALUATION DATA FORM

PROS.	TRACT

DRLLG. DEPTH	WATER DEPTH	PRES. GRAD.	TEMP. GRAD.	TRACT SIZE, AC.	DR. DEV. COST	DR. OPER. COST

NO. EXP. WELLS	DUAL FRACTION	PLATFORM NO.

PLAT. 1 WELLS	PLAT. 2 WELLS	PLAT. 3 WELLS	PLAT. 4 WELLS

YEAR 1 DEV.	YEAR 2 DEV.	YEAR 3 DEV.	YEAR 4 DEV.	DRY RISK

VARIABLE	MINIMUM	MAXIMUM	MOST PROB	
ACRES				Productive acres
PROD				Oil ac. ft./Total ac. ft.
LIFG				Gas reservoir life
LIFE				Oil reservoir life
THICK				Net pay, ft.
PHI				Porosity, fraction
SW				Water saturation, fraction
B				Oil formation volume factor, bbl./STB
RECO				Recovery factor, oil (fraction of OIP or STB/ac. ft.)
RECG				Recovery factor, gas (fraction of GIP or MCF/ac. ft.)
Z				Gas Z factor
QIIR				Initial STB/day/stream
QGIR				Initial MCF/day/stream
DISC				Discount rate, fraction
YRS				Years to production
FRAC				Fraction of oil reserves prod. before decline sets in (set equal to 0)
GOR				SCF/STB
YIELD				STB condensate/MMSCF
OILS				Current $/STB
GASS				Current $/MCF
TAX				Tax, fraction of gross income
ESCG				Price escalation of gas, $/MCF/year
ESCO				Price escalation of oil, $/STB/year
INFE				Inflation factor for operating costs (1972 = 1.0)
INFD				Inflation factor for development costs (1972 = 1.0)

Exhibit II

POST SALE ANALYSIS

After a sale, each high bid must be analyzed in order that the accept or reject decision may be made by the BLM OCS field office Manager. The Post Sale Analysis Chart allows consideration of the three major leasing objectives: (1) receipt of fair market value, (2) environmental protection, and (3) orderly and timely resource development. The chart technique was developed to insure consistency in decisionmaking and to provide a permanent record of each factor considered by the Manager.

A general explanation of each column in the chart should demonstrate the chart's usefulness in bid analysis. The chart's columns are organized in a manner that separates considerations for each of the three leasing objectives.

Accept/Reject

These columns are left blank until the decision has been made. One of the two columns is then checked for each tract.

Prospect Number and Tract Number

These columns are used for identification purposes.

(1) Type of tract shows whether the tract is drainage (I), development (II) or wildcat (III). Each time a frontier area is entered for leasing, all tracts will be Type III.

(2) Total High Bid.

(3) GS Reliability Rating—refers to the quantity and quality of Geological Survey's data, and ranges from A to E with A referring to a drainage tract with very good data available and E designating a wildcat or development tract with very little data available.

(4) Mean of Range of Values (ROV)—The mean of the range of values is the GS presale estimate of the value of the tract. The program used by GS generates 500 values for a tract based on variations in input parameters. The mean of these values is one of the values considered by the Manager in the decision-making process.

(5) High Bid as Percent of Mean of ROV—shows the relationship of the high bid to the value placed on the tract by GS.

(6) Discounted Mean of ROV—The mean of the range of values is discounted by 10 percent per year for two years. A tract for which a high bid is rejected may not be re-offered for lease until final disposition of any appeal that may be filed. In the past, appeals have required a minimum of two years to process. The mean value is discounted to reflect the present value of the loss to the government. It is another value for consideration by the Manager.

(7) High Bid as Percent of Discounted Mean of ROV.

(8) Average Evaluation of Tract—This evaluation is calculated by summing all bids on the tract and the government's pre-sale value and dividing by the total number of bids plus one. This number represents an average value of the tract. Its significance increases with the number of bids submitted on a tract.

(9) High Bid as Percent of Average Evaluation of Tract.

(10) Number of Bids on Tract—reveals the degree of competitive interest on the given tract.

(11) Average Number of Bids per Tract by Type of Tract. This number reveals the average number of bids received by all drainage tracts, by all development tracts, or by all wildcat tracts depending upon the type of tract in question. The three types of tracts are separated in determining averages because drainage tracts typically receive fewer bids than the other two types, and this might distort the average if all tracts were considered together.

(12) Tract's Deviation from Average/Mean Deviation by Type of Tract—The average cannot be regarded as a typical value if the scatter or dispersion around it is very large. Therefore, the mean deviation by type of tract is calculated as a measure of dispersion around the average.

(13) Bidding Performance of High Bidder by Quarters—shows how many times the high bidder on the tract in question bid at the sale, and where the high bidder's bid stood in relation to other bids on tracts of interest.

(14) Average Number of Bids on Tracts on which High Bidder Bid—shows the level of competitive interest in tracts bid on by high bidders. Columns 13 and 14 are used together to evaluate the high bidder's strategy. The analysis helps to identify the speculative bidder.

(15) Potential Environmental Hazard—Each tract is rated in the Environmental Impact Statement as to its potential environmental hazard. These levels or zones, such as minimal or moderate, are listed on the chart for the Manager's use.

(16) Geologic/Bottom Hazards—Shortly before the sale, members of the BLM Environmental Assessment Team review GS's latest resolution data on the sale tracts, and provide a report to the OCS Manager detailing determined geologic/bottom hazards. Information from this report is shown on the charts as another measure of environmental risks associated with leasing and development of the tract in question.

(17) History of Tract—Indicates nominations received on tract for current and past sales, whether ever offered and ever leased previously.

(18) Miles from Shore.

(19) Miles from Pipeline.

(20) Water Depth Meters.

(21) Other Considerations—Provides space for listing any other factors having impact on the decision such as special stipulations to be imposed on tract if leased and existence in fairway.

The remainder of each page of the matrix consists of a map which shows the tracts up for bid and those adjacent to them. Leases in existence and expired leases are delineated.

		1	2	4	3	5	A	7	9	11	13	14	16	17	18	19	20	21	22	23		B	C	D	E	
ACCEPT	REJECT	PROSPECT	TRACT NUMBER	ACRES	TYPE OF TRACT	TOTAL HIGH BID $ (H. B)	G&G RELIABILITY RATING	MEAN OF ROV $	H.B. AS % OF MEAN OF ROV	DISCOUNTED MEAN OF ROV $	H.B. AS % OF DISC. MEAN OF ROV	AVERAGE EVALUATION OF TRACT $	H.B. AS % OF AVG. EVALU OF TRACT	# BIDS ON TRACT	AVG. # OF BIDS PER TRACT BY TYPE	TRACT DEVIATION FROM AVG. / MEAN DEVIATION BY TYPE		BIDDING PERFORMANCE OF HIGH BIDDER BY 1/4'S 1÷2	3÷4	AVG. # OF BIDS BY HIGH BIDDER	POTENTIAL ENVIRONMENTAL HAZARD	GEOLOGIC/BOTTOM HAZARDS	HISTORY OF TRACT	MILES FROM SHORE	MILES FROM PIPE-LINE	WATER DEPTH METERS	OTHER CONSIDERATIONS

Senator KENNEDY. Mr. Carter, are you giving any consideration to developing some public corporation to develop any of the offshore drilling?

Mr. CARTER. No. I am not.

Senator KENNEDY. Why not?

Mr. CARTER. It is a question that has come under some debate and we have taken a position on it in testimony in the Senate Interior Committee. I do not recall the specifics of that, Senator, but basically it was that the administration was opposed to the development of the public corporation.

Maybe Mr. Ligon knows more about that than I do.

Mr. LIGON. That is correct.

Senator KENNEDY. And what about a strategic reserve, were you giving any consideration to putting some aside for a strategic reserve?

Mr. LIGON. You know, Senator Kennedy, at the present time there have been several advisory groups of all different kinds of makeups that have recommended strategic reserve kinds of actions that we should do.

We are looking into those now and that is the kind of thing that will be in the Project Independence blueprint.

Senator KENNEDY. Well, there will not be any left for a strategic reserve if you lease it all before you make your decision on that.

Thank you very much, gentlemen.

Mr. CARTER. Thank you.

Senator KENNEDY. We will have some questions for you. We want to thank you very much.

We have Congressman Dingell here who has conducted very extensive hearings on offshore leasing. We will hear his statement, and then we have two final witnesses.

Due to our scheduling we are going to have to conclude by 1 o'clock, and we have two witnesses after Congressman Dingell.

We will ask all of our witnesses to try to accommodate us.

Congressman Dingell?

STATEMENT OF HON. JOHN D. DINGELL, A REPRESENTATIVE IN CONGRESS FROM THE 16TH CONGRESSIONAL DISTRICT OF THE STATE OF MICHIGAN, ACCOMPANIED BY MR. WILLIAM DEMAREST

Mr. DINGELL. Mr. Chairman, I wish to commend you for holding this hearing, and I wish to thank you for the courtesy of permitting me to appear on rather short notice. I understand the pressures of time that exist here in the Senate, as they exist over on the House side of the Capitol.

For the record, Mr. Chairman, my name is John D. Dingell. I am a Member of Congress from the 16th Congressional District of Michigan. I am chairman of the Subcommittee on Activities of Regulatory Agencies of the Small Business Committee of the House of Representatives, and a member of the Committee on Interstate and Foreign Commerce of the House of Representatives. Both committees have held extensive inquiries into subjects related to the matters now before this subcommittee.

I think that it is important that you should hold these hearings, Mr. Chairman, and that the subcommittee should proceed vigorously toward getting answers to many serious questions which are related to the Interior Department's proposal to lease 10 million acres of the public lands offshore.

I might begin by stating that the proposals that I have seen, literally drip questions with regard to both energy and economic policy. Existing proposals also drip questions with regard to antitrust policy. I must confess that viewed against the background provided the failures of the Federal Government to develop an intelligent or an adequate administrative process and procedure by which to gather the facts and to make sound judgments based upon consideration of all of the facts relative to the public interest, the proposals I have seen give me great cause for concern.

I have with me today Mr. William Demarest, counsel to my Subcommittee on Activities of Regulatory Agencies in the House. He and I together with the other members of the subcommittee have gone rather extensively into the question of the data and information base with regard to oil and gas reserves which supports the Government leasing policy, both offshore and onshore.

I might begin by pointing out that the information in the three volumes of hearings which we have published to date and that gathered at more recent hearings held just this past week, indicate that the Government's data base for making leases of this kind is in an appalling state of disarray, if it in fact exists at all.

I come here, Mr. Chairman, from a meeting in my office, at which we had representatives of the Federal Energy Administration explain what regulatory steps are being taken to procure data regarding the energy resources of the United States under section 11(a) of the recently enacted Energy Supply and Environmental Coordination Act of 1974. I am here to report to you that no steps whatsoever have been taken to comply with that particular statute.

Mr. Chairman, the hearings held by my subcommittee indicated to me with great clarity that the Department of the Interior is totally incapable of properly administering a 1-million-acre a year leasing program. The prospects of observing how a 10-million-acre leasing program will take place, frankly, I find appalling.

I would point out that whether or not these leases are being used for purposes of shutting in large acreages of the public lands in the hands of oil companies is really not important. The facts are that the oil companies have neither the capital resources, the material, nor the skilled manpower to develop these areas. Of course, the result of reliance upon the bonus bidding system of leasing is, quite frankly, disastrous from the standpoint of the capital structure of even some of the giants of the industry, but most clearly so with regard to the smaller firms in the industry.

Mr. Chairman, during the hearings of our subcommittee, the inability of the Department of Interior to administer a 1 million acre leasing program was very clearly pointed out with respect to assuring that the Government received fair value for the tracts it leases, or that the Government knows the amount of the reserves underlying the leases or that the Government is capable of administering and supervising operations on these leases once they are let.

The subcommittee's investigation indicated that the Department of the Interior was incapable of assessing, indeed, incapable of even remotely approximating the value of these tracts.

For an example, let us look to a single lease sale, the December 20, 1973, sale. In that sale, Tract No. 32–6, had a presale valuation of $38,822 established by the Department of the Interior. The high bid for the tract was $32,332,000. The industry's evaluation was 826 times greater than the Interior Department's evaluation. Interior would have willingly leased this tract for something on the order of $32,000. An oil industry bidder was willing to plunk down in excess of $32 million; keep in mind the fact that these oil companies are not known for their altruism.

In tract 32–83, the presale evaluation was set at $11,899,566 by the Department. The high bid was $211,997,600. This is a difference of over $200 million on a single tract.

A further peculiarity occurs during this lease sale. The presale value of $144,000 is the only presale value which is in an even $1000 figure. Moreover, this value is the only presale figure to appear as a presale value on more than one tract. This figure in fact appears as presale value for 35 of the 89 tracts that were bid upon.

In view of the fact that no other two tracts had the same presale value, I have characterized this figure as a phantom number. Testimony indicated this value was applied in those instances in which either a lower value was indicated by the Interior Department's data, or whenever no data existed or other estimate was established.

The bidding on some of these same tracts, the tracts on which the $144,000 presale evaluation was established, is instructive. On tract 32–84, the high bid was $91,767,600, a bid 637.3 times greater than the $144,000 presale value. On tract 32–77, the high bid of $76,827,600 was 533 times greater than the tract's $144,000 presale value.

These examples, it is true, are just that, instances of underevaluation, but that does not mean the examples are isolated. Let us look at Interior's aggregate performance on this same lease sale. The cumulative presale evaluation of the 89 tracts bid upon was $146,-051,158. The aggregate of high bids on these 89 tracts was $1,491,-617,118. Thus, the aggregate underevaluation of these tracts was in excess of $1.3 billion, actually $1,345,565,960. The total of the high bids was 1,100 percent higher than the aggregate of the presale values.

The cumulative effect of this underevaluation is even more startling when the examination is confined to the 35 tracts on which the $144,000 presale value was placed. On these tracts, the disparity between the high bids and the presale values was roughly six times greater than the underevaluation of all tracts. That is, the disparity in these tracts was approximately 6,000 percent.

A further problem results from the prevalence of single bids on these tracts, and I think this moves us towards the question of antitrust problems resulting from Federal leasing policies as opposed to the question of the competence of the Government to administer this particular program.

Interior claims that the disparity between high bids and its presale evaluation is not so serious in view of the competition which allegedly keeps the bids high. Perhaps Interior should talk to the Federal Trade Commission which is currently conducting an extensive study of this industry, and which has conducted previous studies on competition

in the oil industry; to the Federal Power Commission, some of whose officers have testified before my subcommittee, indicating that there is very little competition in this industry; to the Justice Department, perhaps, or even to some of the committees in Congress, before relying too heavily on competition in the oil industry for anything which might protect the public interest.

The existence of large numbers of single bids on tracts effectively rebuts the argument that competition mitigates the need for accurate presale evaluation. Again we must clearly keep in mind that the Interior Department in handling a much smaller program than that proposed, was not able to make an intelligent evaluation of the worth, of the leases or the extent of the resources underneath the leases.

In the June 1972 Outer Continental Shelf lease sale, tract number 419 had a presale value of $1,017,504. The high bid of $515,000 on the tract was accepted by Interior, despite the fact that it was only one-half the presale value, and despite the fact that it was a single bid, yet Interior relies upon competition as the justification for not improving its evaluation procedures.

Mr. Chairman, I do not believe it is necessary to belabor this point further, because I think the limited information developed in hearings before my subcommittee which I have been able to make available to you, in this time, shows that Interior has proven its inadequacy and inability to administer a modest leasing program of 1 million acres a year. Imagine the results when that figure is stepped up by a tenfold magnitude with no increase either in personnel or data base, and while simultaneously FEA fails to carry out its statutory responsibility to proceed with a rulemaking, to gather information with regard to data from the oil companies relating to these very issues. I think, this subcommittee must not only ask questions with regard to data base, but you ought to hear from the Department of Justice and find out about the antitrust implications of the proposal. You should hear from EPA and CEQ to find out about the environmental questions raised by this proposal. Find out what coordinations have taken place with EPA, CEQ the State agencies or with NOAA, which has the proper responsibility for administering the Coastal Zone Management Act.

I think before the Congress acquiesces in allowing such a grandiose leasing program as that proposed by Interior, we must receive proof and not just assurances, indeed, we must receive hard demonstrations that Interior has developed the ability to administer such a program.

In 1971, the Interior Department had draft regulations in existence which would have provided Interior with the data necessary to make more accurate presale evaluations. It was only after my subcommittee pointed out the fact that these regulations had stagnated within Interior for 3 years that the Department moved to publish these in the Federal Register as proposed regulations. This subcommittee might pursue the question of what improvements have been made to assure that similar delays do not cripple the proposed expanded leasing program that is the subject of this inquiry.

Finally, the subcommittee must demand proof that expanded leasing will take into account the availability of drilling rigs, pipe equipment, and manpower; I would like to point out that in the hearings held by my subcommittee, we found out that there were major shortages in each of these areas.

We also found out that the bidding structure—that is, joint bids between majors—created an almost impossible situation with regard to the smaller firms, the independents in the industry, getting out there and drilling. We also found that the exclusion of royalty bidding made it totally impossible for the small firms to bid on the very lucrative and potentially richest sources of oil that we have within the lower 48 States.

Therefore, I think the subcommittee ought to ask some questions with regard to royalty bidding, and, to repeat, I recommend that you explore the question of the antitrust problems that flow from allowing leases to be "socked" aside under the ownership and control of the majors at the rate of 10 million acres per year, when the facts will demonstrate, I believe, to this subcommittee as they did to mine, that there are large amounts of acreage which are, at this particular minute, shut in. Now, it was my suspicion that this acreage was shut in awaiting a price rise. Interior denies that fact to be so, but the hard fact of the matter is that leases are shut in. The Department of the Interior says they are shut in by reason of leasee's inability to get the pipelines and the other gathering facilities in existence, which are necessary to producing out of these particular leases. Won't such shortages be exacerbated by an expanded leasing program, resulting in more shut-in leases?

Senator KENNEDY. We can give you just a couple of more minutes, Congressman.

Mr. DINGELL. Mr. Chairman, I understand the problem. Let me just mention some other problems that exist here. There is the problem of depletion of capital resources from the industry, because of the way the bidding is conducted. There are the problems related to the fact that there are these tremendous number of produceable, shut-in leases. Congress must not permit the industry to obtain valuable lands for a fraction of their worth, nor may we permit these leases to be held, shut-in, without producing from them. And I would point out that one must ask, what is the benefit to the public interest, from a large increase in the acreages of lands leased on the theory that this expanded leasing will increase the production of oil and gas in the United States, when in point of fact much of the acreage already under lease is not producing at all. One must ask, is the expanded leasing proposal an attempt to circumvent congressional proposals to create a Federal Oil and Gas Corporation, whose purpose it would be to assure production increases on the public lands? Is it an attempt, perhaps, to make available to the major oil companies large leases which they can develop at their pleasure as prices rise?

There are some administrative questions which require inquiry by the subcommittee. What relationship exists between the country's energy needs and the 10-million-acre figure? I would suspect that this subcommittee will be able to find none whatsoever. My subcommittee has not been able to uncover any such relationships. We have never been able to get a justification for the 10-million-acre figure. This is curious particularly in view of the inability of the industry to develop the leases which they now have.

There are several other matters to which I have alluded, and which I believe are matters that should be considered by the Subcommittee.

In conclusion, I believe that the Interior Department plan now being considered by this Subcommittee requires some hard answers before the Interior Department moves toward implementation of a proposal which is not going to provide any discernible immediate benefit to the consumers of oil or energy in the United States, and which offers such great opportunity for highly beneficial results to the industry.

I would just like to read to you some testimony. We had Mr. McKelvey and Mr. Vogley of the Interior Department before my subcommittee. I would like to read a question I asked.

"I would like to go a little further. Assuming that you have drilling with the total capital capacity and steel pipe availability for, say, 1.5 to 2 million acres, and you have 8 million acres under lease this year, and you lease another 10 million next year, and another 10 [million] in the following year. If you lease another 10 [million acres] the following year after that, you are going to have some kind of backlog of undrilled leases."

This is the response of Mr. Vogley from the Interior Department: "Mr. Vogley. The important point, Congressman Dingell, is that we do not believe drilling capacity is fixed. We think drilling capacity can be very greatly expanded, and in the national interest should be expanded. We do not think these acres will be out there undrilled."

After which the following interchange took place: "Mr. Dingell. What assurances do you have on that point?"

"Mr. Vogley. None, sir."

"Mr. Dingell. None?"

Mr. Chairman, I would like to point out that, in the back of the hearing record which we have made available to you is information we procured from Interior relating to the amount of acreage shut in at this particular time for one reason or another. That information is available in the hearing record and we will see that this information is made available to you for the use of your staff. I would urge you, Mr. Chairman, to see to it that the antitrust questions, the small business questions, the environmental questions, are answered before this program is permitted to go forward, when it offers no prospect for any significant benefit either to the consumers, the small businessmen, or to the energy supplies of the nation.

Thank you, Mr. Chairman.

Senator KENNEDY. Thank you very much, Congressman. You have spent a great deal of time on this issue, and it is very helpful to have your comments and observations about this particular problem, and we thank you for coming and taking the time to be here.

Senate TUNNEY. Thank you very much.

Mr. DINGELL. Thank you, Mr. Chairman, and you, Senator Tunney.

Senator KENNEDY. Our next witness is Steve Jellinek, who is the staff director of the Council on Environmental Quality, and Dr. Menard. Mr. Jellinek is representing Russell Peterson, Chairman of the Council. He has been staff director for CEQ for a period of time. During that time, CEQ was undertaking a study of environmental concerns relating to offshore development. Prior to being named a staff director, he was a member of the staff of the Council for a period of 3 years. We appreciate his appearance.

Dr. Menard was a chairman of the National Academy of Sciences committee that advised CEQ, and prepared a critique of its final

report on offshore oil development; he is a professor at Scripps Institute of Oceanography and a member of the National Academy of Science's Committee on Science and Public Policy. He is also a consultant to the panel of the OTA, studying the onshore and offshore effects of proposed oil and gas drilling, as well as nuclear powerplants, deepwater ports, and the coastal zone; that study is focusing on the Baltimore Canyon area.

We are pleased to have you with us today. I know you have some comments. Maybe if you could each take about 10 minutes now we will then include whatever testimony you have, any printed testimony, in the record.

STATEMENT OF STEVEN D. JELLINEK, STAFF DIRECTOR, COUNCIL ON ENVIRONMENTAL QUALITY

Mr. JELLINEK. Thank you, Senator.

Members of the committee, I am happy to be here this morning to represent Russell Peterson, Chairman of the Council. I have a brief written statement which I will submit for the record. It describes our study, how we went about it, and some of the major conclusions.

In the interest of permitting time for you to ask questions, let me just say a couple of things on the two topics that seem to have gotten the most attention here this morning. First, I want to emphasize that the Council study was not an environmental impact statement. It is certainly not the last word in assessing the environmental risks of developing the Atlantic OCS or the Gulf of Alaska. In the limited time we had for the study, we not only identified risks but we also raised a number of questions that we think should, and must, be answered in the decisionmaking process that the Department of Interior will be going through.

Second, I want to emphasize the importance of the impact of OCS development on the coastal zone, the onshore impact as we have called it. In our studies, findings, and recommendations, we made a number of references to the Coastal Zone Management Act. We support that act, and the framework it established, as a good basis for trying to permit the Interior Department and other Federal agencies to work with the States involved, and to develop a common basis for assessing the kinds of onshore impact that could result from offshore development. We encourage the Interior Department and other Federal agencies to do this, and to work assiduously toward that goal.

I will now turn to Dr. Menard.

[The prepared statement of Steve Jellinek follows:]

PREPARED STATEMENT OF STEVEN D. JELLINEK, STAFF DIRECTOR, COUNCIL ON ENVIRONMENTAL QUALITY

Mr. Chairman and members of the committee: I am pleased to appear here today to discuss the study on Outer Continental Shelf oil and gas which the Council on Environmental Quality submitted to the President on April 18, 1974.

The Council conducted this study in consultation with the Enviornmental Protection Agency, the National Academy of Sciences, other Federal agencies, and the Governors, legislators, and citizens of the coastal states involved.

This report was intended to advise the President on the relative risks of oil and gas development in the Atlantic and Gulf of Alaska outer continental shelves (OCS) and to suggest ways in which the risks can be minimized or prevented.

To carry out this assessment, the Council undertook studies in a number of areas. Both offshore and onshore impacts of oil spills and discharges and of other OCS-related activities were studied. Statistical analyses of oil spill data were performed to identify problem areas. The movement of oil in the oceans was determined using computer modeling techniques. The ability of OCS technology and practices to perform safely under hostile weather and seismic conditions was assessed. Estimates of potential oil and gas resources which may be found in the various OCS areas were reviewed. The potential benefits of OCS oil and gas production from those areas in satisfying regional energy demand were investigated. Finally, the effectiveness of Federal regulatory and enforcement processes and the broader issues of intergovernmental coordination and planning were examined.

As a result of the study, the Council developed the following ranking of relative environmental risks, ranging from lowest to highest, associated with potential oil and gas operations in the Atlantic and Gulf of Alaska Outer Continental Shelves:

Eastern Georges Bank (East of 68° W; EDS 1 and 2).
Southern Baltimore Canyon (South of 37° N; EDS 9).
Western Georges Bank (West of 68°; EDS 3 and 4).
Central Baltimore Canyon (Between 37° and 39.5° N; EDS 6, 7, and 8).
Northern Baltimore Canyon (North of 39.5° N; EDS 5).
Southeast Georgia Embayment (EDS 10, 11, 12, 13, and 14).
Western Gulf of Alaska (West of 150° W; ADS 7, 8, and 9).
Eastern Gulf of Alaska (East of 150° W; ADS 1, 2, 3, 4, 5, and 6).

The ranking is CEQ's best estimate of the overall relative degree of risk to the marine, coastal, and human environment; it is based on an integration of the study's findings with respect to the effects of development onshore as well as of oil spills offshore, incidence of severe weather and seismic phenomena in potential development areas, the state of technology, and projections of regional energy needs.

The Council also concluded that the Federal Government must be guided by and committed to a set of essential principles in choosing areas to lease and in administering environmentally safe offshore operations.

The principles identified by CEQ as essential are:

Exploration and development of the OCS must take place under a policy which puts very high priority on environmental protection.

The location and phasing of OCS leasing should be designed to achieve the energy supply objectives of the leasing program at minimum environmental risk.

The best commercially available technology must be used to minimize environmental risks in new OCS areas.

Regulatory authorities available to Federal agencies must be fully implemented and requirements strictly enforced to minimize environmental risks in new OCS areas.

Planning at all phases of OCS oil and gas operations must respect the dynamic relationship between initial Federal leasing decisions and subsequent state and local community action. The states and the communities affected must be given complete information as early as possible so that planning can precede and channel the inevitable development pressures. Experience must be continuously integrated into the management process.

The interested public must be given the opportunity to participate and play a major advisory role in the Federal management and regulation of the OCS.

Finally, the Council made a large number of specific recommendations for improving OCS oil and gas technology, for strengthening the planning and regulation of OCS operations, and for closing a number of gaps in the state of knowledge about the effects of oil on the OCS environment.

The National Academy of Science panel's critique generally endorsed the findings and recommendations of CEQ's report. Specifically, the panel commended the report as a useful first step toward the development of new Federal policies

for resource development in these two OCS areas. The panel also concurred with the Council's recommendations for decreasing the risk of OCS operations and for minimizing onshore impacts through strengthened regulations for OCS technology and through improved coordination among governmental agencies.

The panel agreed with the assessment that OCS operations in the Gulf of Alaska would present the highest environmental risk, but took exception to the Council's ranking of regions in the Atlantic OCS. The panel expressed the belief that the criteria used in making the rankings were inadequate and incomplete and that other criteria should be considered. The Council believes that consideration of the other criteria mentioned by the NAS panel would not have changed the relative order of ranking. In fact, the effect of oil on the offshore marine environment was considered to the extent possible, as were the alternative uses of the OCS.

Other issues raised by the NAS critique, such as an expanded involvement of the Federal Government in oil and gas exploration, the relationship of this study to Project Independence, and national policy on annual energy growth rates, are clearly outside of the scope of the assignment covered by this study.

The philosophy underlying our report is that the benefits of potential oil development must be balanced against the risks of environmental damage. When this balance is favorable, development should proceed with caution and with a commitment to minimize damage. When the balance is unfavorable, the Council believes that development should not move ahead until environmental risks can be lowered to an acceptable level.

In the case of OCS development in the Atlantic and the Gulf of Alaska, as with other major new energy development programs, the public interest requires vironmental terms, and be able to weigh these costs against the benefits of resource development and against the consequences of foregoing development. This is the spirit of public policymaking that was established over four years ago when the Congress passed and the President signed the National Environmental Policy Act. It was in this spirit that the Council's report—*OCS Oil and Gas—An Environmental Assessment*—was developed.

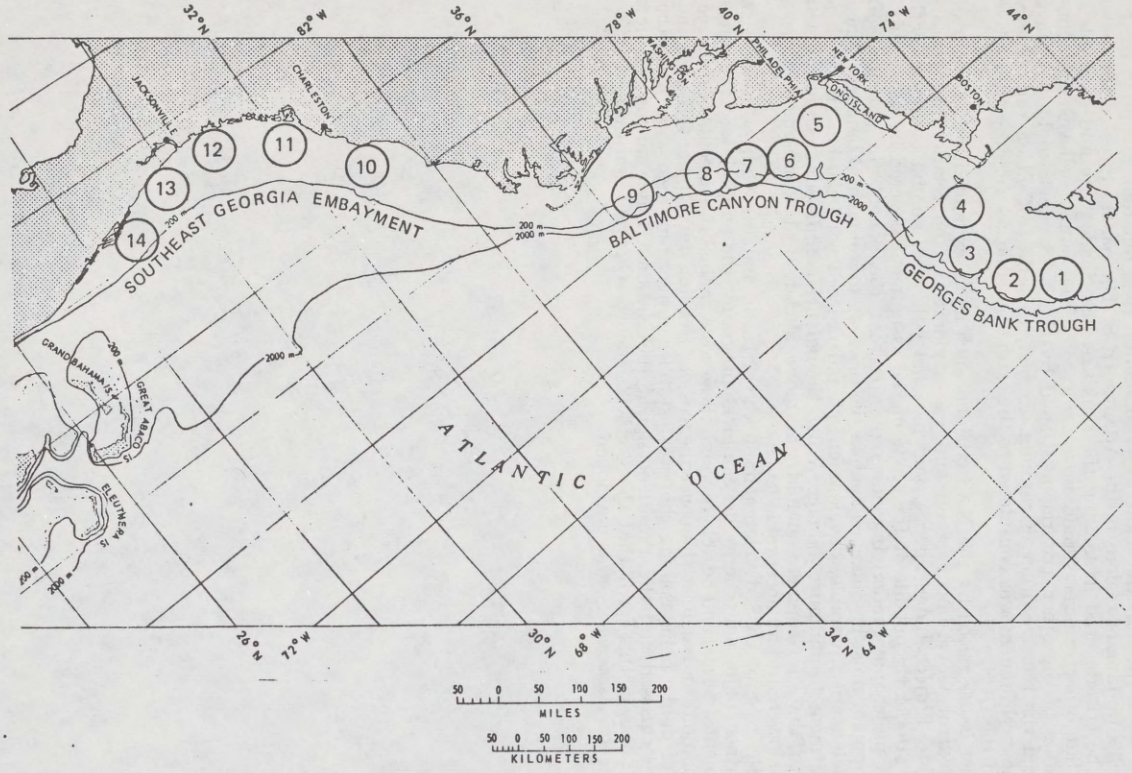


Figure 2-1. Atlantic Hypothetical Drilling Sites

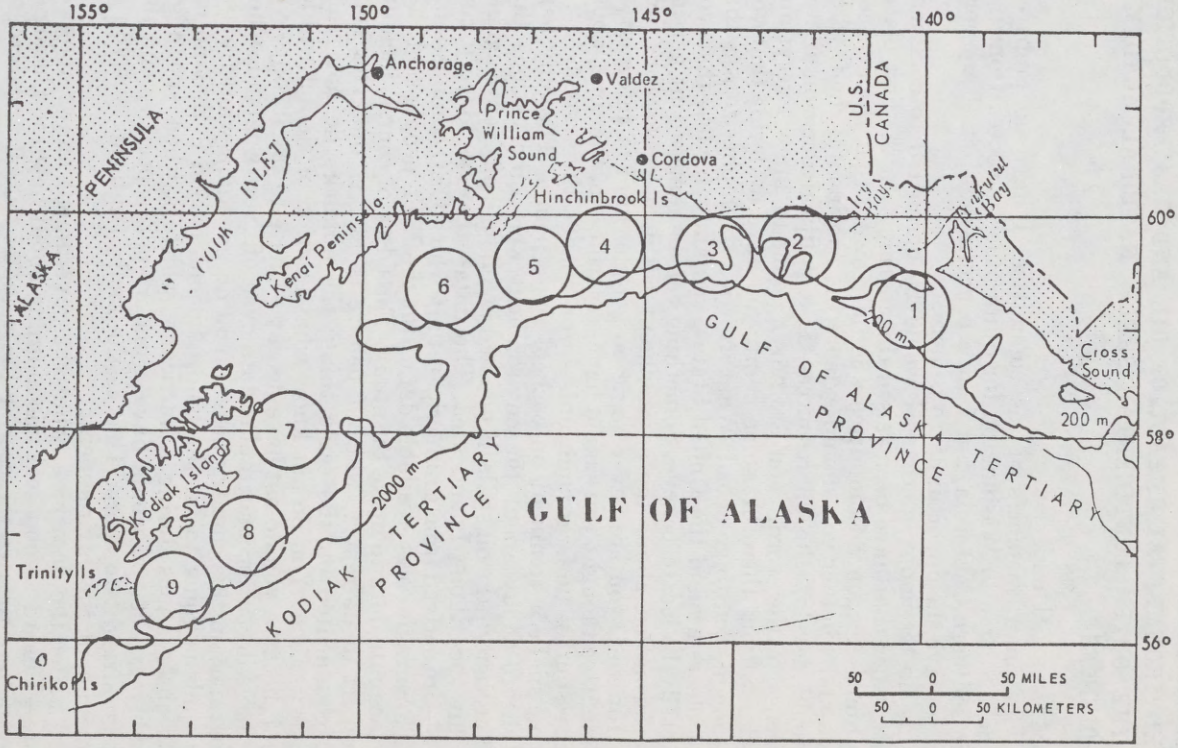


Figure 2-2. Gulf of Alaska Hypothetical Drilling Sites

STATEMENT OF H. W. MENARD, CHAIRMAN, REVIEW COMMITTEE ON ENVIRONMENTAL IMPACT OF OIL AND GAS PRODUCTION ON THE OUTER CONTINENTAL SHELF, NATIONAL ACADEMY OF SCIENCES

Dr. MENARD. Thank you.

Mr. Chairman, members of the committee, I have no prepared statement. I came to Washington for quite other purposes from my home in southern California, but I am a concerned citizen. I am very pleased to have the opportunity to be here.

Having no testimony, perhaps I would be permitted to comment on a few issues that have been raised this morning. In the first place, our National Academy Committee was fully aware that the decision on when and whether you should explore the continental shelf, when you should develop the oil resources, is a political decision in the finest sense of the word. You are never going to know everything that is known out there. At some point, you have to decide that you know enough, and to go ahead. What we tried to emphasize was that in most places around the United States, you know far less than you might easily be led to believe. Something can be done about getting more information about the environment within a reasonable time scale. However, you are never going to get the kind of information our committee thought you should have, regardless of the time, about natural resources underground, unless you change the system.

Let me make a comment on each of these points. The only hard data I heard today about the environment were observations that 8 to 10 percent of the oil spills, if you had an oil field off New England, would hit the Rhode Island area. The data—they sould very convincing—are derived from a numerical study which CEQ commissioned at MIT, using the best available data. But the MIT people said they had inadequate data to make the study. The CEQ, of course, included their report in its report, which I believe is not yet out. Our committee commented on the same thing; the numbers do not really mean very much. You do not know what fraction of the oil will hit the land, because you do not have decent—I hate to say it, but—you do not have decent oceanographic data even off New England, where oceanography in this country began. You do not know what fraction of the spills is going to hit the land, and one reason is that no one collects observations during a hurricane, which is when you might reasonably expect you would have a major spill, especially one that would go straight to shore. That is the kind of information you do not have about the environment.

Now, as for the data base, what the government knows about oil offshore—I heard a good deal this morning about how the Geological Survey underestimates the cost or the value of our oil underground. But one must balance that, I think, by saying that the oil companies, after all, hit dry holes all the time. It is not that the Survey is ignorant and the oil companies informed. It is that under the system under which we now operate, both sides are uninformed, and it is never going to change as long as you have a system in which you lease the property before you know what is there. You have no way of knowing, to return to the environment, how big an oil spill you are apt to have, how often off New England, unless you know how much oil is off there, and nobody knows. The oil companies do not know.

I understand that there are various mechanisms being explored for alternatives to our present leasing program; and I wish them success. I would close, then, by emphasizing that, with the present system, you have little chance of knowing what the environmental impact is going to be of developing offshore oil off New England, California, or Alaska.

Senator KENNEDY. Could you comment, either of you or both, about the nature of our current knowledge and whether it is possible to draw some conclusions about the environmental impact of drilling in the southeast Atlantic, the gulf, and other offshore areas. How much information is really available? Is it, as I gathered from listening to the administration spokesmen, just a question of pulling it together, conforming to the law, offering these leases and beginning to pump. Is the raw data available, or is it not available—how long would it take to get it; to make some hard judgments about it? Unless you know exactly how much is down there, then you cannot estimate its value or the danger to the coastal area, and how much might spill? Can you make some estimates to respond to environmental concerns?

Dr. MENARD. The issue is, what can the Geological Survey do with the information it has? The central point is, you now have a data acquisition system—if I can launch into my own jargon—which can acquire an enormous amount of computerized information about the OCS. You cannot handle that kind and quantity of information without a very advanced type of system, and I do not know whether the Geological Survey has it. But I can suggest a very simple way to find out; you just telephone over and ask them to give you a computer printout of all of the data that they have in a small area, or to give you a computer map that shows where they are working. If you phone Scripps Institution, and you want to know whether we have a sounding line anywhere in the Pacific Ocean, we just ask the computer, and it will print it out and send it to you. It will tell you whether we have magnetic data, it will tell you anything of this sort you want to know. If they have a system, they can do that immediately. All you have to do is telephone them.

I would think you will find out that they have a mound of information, but they have no way of handling it, and they are probably worse off than they were before they got the information

Mr. JELLINEK. I would agree with what Dr. Menard said in his opening remarks about not really being able to precisely determine what the environmental impact will be, unless you inow how much oil is out there; and, of course, we do not know if there is any oil out there. No one does until they actually do begin exploratory drilling. In our study we tried to postulate some worst-case situations. We said assumed that there would be a certain amount of oil there. Then, we assumed a reasonable development schedule and in light of everything we know about past performance we estimated the likelihood of a spill occurring.

One of the ways we approached our study was to recognize that environmental risk is a function of both the possibility of something happening on the one hand, and then the probability of it being damaging if it happens. That is why, in our study, we made a number of very specific and detailed recommendations on preventing damage from happening in the first place. And we have urged, both in the study and since the study, that the Interior Department and the other

44-827 O - 75 - 14

Federal agencies involved focus on those recommendations to improve the technology, to improve the regulatory structure, to improve enforcement mechanisms, to prevent damage from happening in the first place. We think that if enough effort is put in that direction, then the risk that we did assess can be minimized significantly.

Senator KENNEDY. Either from your own personal knowledge, or from studies that you have done, how do you evaluate the environmental impact studies that are done by the Interior in this area? What is the quality—is it excellent, is it pretty good, is it fair, poor? You are a professor; how would you grade them?

Dr. MENARD. I as a professor would really have to say I have not looked at it enough to know. From what I have read in places like the Wall Street Journal and Science Magazine, I would not rate them very high. I think I should say that I really have the highest respect professionally for the members of the Geological Survey, and to the extent that I know them, the members of the parallel professional organizations within the Department of Interior, but I do not think they have the resources, and I do not think they have a chance of doing a job without them.

Senator KENNEDY. What could you tell us about your impression of how they get their information? We talked a little bit about that with the earlier witnesses this morning—about the value of getting independent information versus relying on industry information. Does it really make much of a difference?

Dr. MENARD. No, I think the point was brought up, it is what you use the information for. I personally would have much more faith in the information-gathering experience of the geophysical surveying companies that the oil companies commonly hire to do it. They have by far the best equipment; they have developed the computer techniques for massaging the data. They are the best in the world, and I do not see why the U.S. Government could not draw on these independent data-collecting companies. I would have great faith in them.

Senator KENNEDY. More so than the oil companies?

Mr. MENARD. Do I think they get better data than the oil companies?

Senator KENNEDY. Yes.

Dr. MENARD. No, I think that they get it cheaper. That's why the oil companies hire them. That is, I do not think anybody can get better data than our geophysical data-collecting companies. At least, there is nobody in the world right now. We cannot possibly do what they can do in the oceanographic institutions because we cannot afford it, so we study other kinds of problems.

So the raw data can be very useful if you have the organization to interpret it. But it is the objective of the interpretation that we were trying to focus attention on in our committee analysis. We recommended that the information be available, publicly available, before the leases are given, that is, to change the system of leasing.

Mr. JELLINEK. I would like to add to that just slightly. In terms of the role of environmental information, one of the interesting points that came out in Mr. Carter's description of the processes that Interior goes through in a lease sale is that the environmental impact statement was the last step before deciding to go ahead with leasing. In our review of the program, we recommended that Interior try to figure

out how it could get environmental information considered earlier in the process so that they could use environmental information in making tract selections.

Right now, they do not get certain kinds of information which would be useful in environmental assessment early enough in the process. We also recommended that Interior consider, taking into account proprietary rights and the need to protect competition, whether they could provide information to the public earlier.

Senator STEVENS. Well, isn't that what they have done here by going into a two-step phase with announcing a schedule? Won't they have to prepare an environmental impact statement on approval of the schedule itself as a desired program for leasing?

When I was down there, that decision was not involved. The decision was the leasing itself. Now they have got a program concept of establishing a schedule, and if they made it 20 million acres and their goal is to lease 10 million, it seems to me that they are going to get environment information sooner than they would if they just went right to annoucing a leasing program, taking nominations for the OCS and then announcing a leasing program. They have got, by vitrue of the two-step procedure, a greater environmental awareness than before, haven't they?

Mr. JELLINEK. Yes they have, Senator. My understanding is that Interior has had a scheduling process for a number of years. But in terms of the Atlantic and the Gulf of Alaska, the Department is doing environmental analyses farther in advance of potential lease sales than they have in the past.

However, in terms of early acquisition of geological information that would shed light on possible environmental hazards and making it public, which is one of the key recommendations of our report, the Department has not yet made any final decision on whether or not to do that. We are following up with them.

Senator STEVENS. Let me ask both of you, do you agree there is an urgency in evaluating the potential of offshore production in this period?

Mr. JELLINEK. I would agree, definitely.

Senator STEVENS. Doctor, do you believe there is an urgency involved in this?

Dr. MENARD. I think the sooner we have a national energy inventory, the better.

Senator STEVENS. Well, then, what I would like to inquire, this inquiry—and I do not think it is intentional, but it does seem to have a negative ring of, "let's slow down." Is there any way that your agencies could assist the Interior Department to speed up the process to make this decision?

Mr. JELLINEK. As Mr. Carter mentioned, there are alternatives to the present leasing process. For example, instead of leasing 10 million acres this year and 10 million acres next year, and in succeeding years, to focus on smaller areas where current geologic data indicates that there may be a very high potential for large oil and gas development. That is one alternative.

I understand that the Department is considering this alternative in its impact statement on the 10-million-acre program. We are going to be looking very closely at their analysis of when it comes out.

Senator STEVENS. Well, I am still concerned, as I expressed earlier, that the net result of the process is going to be that we are going to drill the Gulf of Alaska where you say the risk is higher than it is off of the east coast or off California, and it is because of the public clamor that is involved. Our fish do not vote, and I would like to see if there is any way we can assist these people to get into some of these areas where the risk of environmental damage is less than it is in our Gulf of Alaska.

Dr. MENARD. Senator, I believe you mentioned there's a very extensive area unexplored on land in Alaska. Certainly, there is an enormous petroleum reserve west of Prudhoe Bay. There would not be any seeps at sea from that.

Senator STEVENS. I'm afraid our environmentalist friends want to withdraw all that land and put it into wildlife refuges, national parks and forests and in the wild and scenic rivers categories before we know its geological contents. That is one of the reasons I mentioned that this morning. We also have 9 million acres set aside in our wildlife Arctic Range that probably, from what we know now, looks like one of the greatest oil provinces in the country. But those are inaccessible to us. Doctor, that was a little barb I threw at Mr. Carter, in case you did not notice it.

Thank you very much.

Senator KENNEDY. We want to make sure that the record reflects the interest, my own in particular in developing some procedures to examine the really important and significant environmental issues and questions before decisions are made; to include the inputs of the States and other public interest groups; and to reach these decisions by an open process. I do not think there is any area of the country that needs energy resources more than we do in New England. And certainly, we are not interested in stalling or holding up these decisions if these other judgments can be made.

We are paying now about 25 percent more for our energy then any other part of the country, and there is tremendous interest in energy in New England. We are not getting any kind of assurance that we will do any better even with drilling off our coast. We do not see any real effort, serious effort, by the Interior to either support the legislation that we saw pass the Senate recently for a fund which would indemnify those areas which would be adversely affected if offshore development occurred near them.

I would feel a great deal more comfortable about the Interior Department's view if we understood that in their planning effort they were really supporting the States and supporting the carrying out of necessary studies; if they were supporting NOAA in its requests for very modest appropriations; if they were willing to give some support to efforts to indemnify the States. At least, speaking as one Senator, I would feel a lot more relaxed about the course of action in that case. We want to find out what can be reasonably achieved over a period of time.

That is really what I want to indicate to my good friend from Alaska. We are interested in making sure that those judgments and concern for the environment are as true in Alaska as they are off New England. I am sure others representing coastal States, Senator Tunney and others, feel the same way.

Finally, do you as individuals who have been considering these environmental concerns believe that there are sufficient material and data available to make responsible judgments on environmental impacts and meet the 10-million-acre leasing requirement that was suggested in the Interior Department memorandum as being the desired goal for 1975—including opening frontier areas.

Mr. JELLINEK. Well, as of last April when we submitted our report, we would have said there is enough information to make broad judgments as to relative risks, but that there was not enough information at that time to make specific decisions on specific areas, and that is why we recommended that more information be gotten.

My understanding is that the Interior Department working with NOAA has developed information-gathering attempts in both the Gulf of Alaska and in various parts of the Atlantic. I am not completely up to date on that, but we certainly hope that those efforts are fruitful and that the results of those efforts will be reflected in the individual impact statements that will be required before any leasing in any of those areas.

Dr. MENARD. As I said in my beginning sentences, it seems to me that is a decision that will have to be made in the absence of all of the data you might want. So all I can give you is my own version as a citizen as to whether you have enough information. I do not think you have. I suspect it will be a few more years.

Senator KENNEDY. Well, the point is made that we cannot answer every allegation, every charge, every wild-eyed theory of every environmentalist. You hear that general kind of response. Are we talking about that, or are we talking about fundamental basic information that is necessary to make a responsible and reasoned judgment?

Dr. MENARD. In my opinion, it would probably be a matter of 2 or 3 years more, but I am not fully aware of everything the Federal Government is doing. I base that in part on the statements of my colleagues on our OCS Committee, particularly the biologists who believe that it is just going to take more information about the effects of oil, crude oil, on organisms before we really know what is going to happen in some detailed way in many areas.

I do not think that means that you cannot go ahead with some orderly process as long as it can be stopped, if it proves advisable within the next few years.

Senator KENNEDY. Thank you very much. You have been very, very helpful.

The subcommittee stands in recess.

[Whereupon, at 1:15 p.m., the subcommittee recessed subject to the call of the Chair.]

APPENDIX I

NEW ENGLAND REGIONAL COMMISSION, ENERGY RESEARCH AND POLICY FORMULATION WORK PROGRAM—JUNE 4, 1974

INTRODUCTION

The Energy Research and Policy Formulation Work Program is directed toward the energy problems which are faced by New England and efforts in the private and public sectors to solve them. The New England Regional Commission recognizes many of these problems, and has isolated some of the most important issues which surround them. The Work Program addresses these issues, and represents one step toward becoming prepared to make major policy decisions concerning energy supply and demand.

The Commission has designed the program to probe major issues in depth. The intention is to provide decision makers in New England with a foundation of information which can be useful immediately for energy policy formulation. It is expected that, as the program progresses, a perspective on other issues and needs will be developed, and that new projects will be formulated for meeting these needs.

Program Areas

The Commission's current work program focusses on the issues raised by meeting energy needs in New England. It is composed of four program areas, each of which covers a particular and related set of energy policy concerns. Each program area contains projects which are designed to produce information which is relevant to energy policy formulation and decision making. The program areas are:

I. Energy supply and demand.
II. Development of an indigenous energy industry.
III. New England's role in national energy research and development.
IV. Energy policy and decisionmaking.

The projects currently included in the four program areas represent work which will be accomplished this year. Although much of this work will be performed under contract, the NERCOM staff, with appropriate assistance, will be responsible for bringing together the information from all the projects in a context which is appropriate for regional and state energy policy formulation.

The following sections of this report present the management plan for accomplishing the work program, and outline descriptions of the projects and their individual tasks. A review of the project descriptions should underline the interdependent nature of the work, and the importance of the final integrative step which is necessary before the information can be assimilated into regional and state planning processes.

MANAGEMENT PLAN

Two levels of management plans have been developed for the Energy Research and Policy Formulation Work Program. The first level is directed toward NERCOM's role in overall program management; the second focuses on the individual projects.

Objectives and strategies

The management plan which appears in the following sub-sections reflects a response to certain objectives which relate to the content and implementation of the Work Program. The plan incorporates a number of strategies which will influence the character of NERCOM's activities over the next eight months.

The key objectives addressed are:

Time.—1. Given the short period of time available for completing the projects, NERCOM will effectively utilize its own and outside resources so that useful output is available on time and without excessive expenditures of funds.

In-house capability.—2. The use of NERCOM staff should result in the most rapid development of in-house expertise without sacrificing project quality or schedule.

Policy relevance.—3. NERCOM will assure that the information produced throughout the Work Program is useful for energy policy formulation at the Federal, regional, and State levels.

Duplication, cross-fertilization.—4. NERCOM will minimize duplication of effort among projects and between the Work Program and the programs of other agencies (e.g. FEA). Cross-fertilization among projects will be maximized.

Non-NERCOM agencies.—5. NERCOM will assure that the information needs and priorities of non-NERCOM agencies in New England energy policy implementation are taken into consideration during the Work Program. NERCOM will utilize the capabilities of outside resources (other than contractors) during the Program.

The strategies represented in the Work Program management plan are responsive to the objectives outlined above. For example:

The four program areas are divided into a minimum of eight projects. This facilitates control, and reduces the need for an individual contractor to assemble a large multi-disciplinary team which may not have worked together before.

In order to avoid surprises in the later stages of the program, substantial allocations of time are made throughout the eight months for review of progress, exchange of information, and early identification of problems.

Provision has been made for developing a contingency plan which could be effected should NERCOM decide that one or more additional projects are needed to bring together partial results from any projects which might deviate from the tight time schedule.

The bulk of the substantive work on the individual projects will be performed by contractors. However, NERCOM staff will be required to play active roles on the projects as managers. The close relationships between NERCOM staff and experts in the field will result in a form of on-the-job training which will benefit the States as well as the region in the long run.

Each project in the work program is specified not only in terms of the products or outputs expected, but also in terms of its policy or decision applications.

The work program contains provisions for review by FEA and other agencies so that any duplication of current or anticipated Federal efforts will be avoided, or at least recognized.

The projects have been designed so that regeneration of data and information is avoided. All projects will use, to the greatest possible extent, common data, assumptions, and other "core" information.

The work Program's communication process design includes periodic meetings among persons involved in the projects. These should help foster cross-fertilization among the projects.

The method for identifying and involving outside experts in the projects should result in downstream efficiencies in the Program. It should also cause the information produced to be relevant to New England's energy policy-makers.

Work program

The Work Program is comprised of four program areas and eight project areas. These areas for investigation are designed so that additional projects could be added later to answer questions which arise during this round of analysis and policy formulation.

Program Area I: Energy Supply and Demand:

Project Area IA: New England Energy Requirements.
Project Area IB: Impacts of Recent Energy Shortages and Price Increases.
Project Area IC: Mechanisms for Dealing with New England's Vulnerability to Aberrations in Energy Supply and Price.

Program Area II: Development of an Indigenous Energy Industry

Project Area IIA: Petroleum Industry Development.
Project Area IIB: Gas Industry Development.
Project Area IIC: Power Plant Siting.

Program Area III: New England's Role in National Energy Research and Development

Project Area IIIA: New England Energy R&D Needs and Capabilities.

Program Area IV: Energy Policy and Decisionmaking

Project Area IV A: Institutional and Legal Issues.

In addition to responsibilities for managing these project areas, providing inputs to the contractors selected to perform all (or part) of the work specified for each area, and developing analyses and reports for NERCOM use, the NERCOM staff will be required to: (a) develop policy interpretations of the research; (b) privide technical assistance to other project managers whose problems fall in their area of expertise; and (c) assure that the needs of appropriate non-NERCOM officials are satisfied.

The Gantt charts on the following pages show the tasks and schedules for the overall Work Program. (More detailed schedules for the individual projects have been developed, and are currently being revised.) A review of the charts show that NERCOM anticipates eleven major decision points over the next sevens months:

June/July

Decide on the necessary modifications to the Work Program after discussing its scope with FEA and representatives from other agencies.
Decide on the balance between in-house and contracted-for project work.
Allocate resources to projects.
Select project managers.
Decide on the most desirable contractual relationships with contractors.
Select contractors.

September/October

Decide on whether or not the Work Program should be modified, and how this modification should be implemented.

Decide on whether or not to add one or more "wrap-up" projects.

November/December

Decide on a strategy for presenting project outputs.

Decide on the scope of a post-December work program.

The major milestones for the Work Program are, as a minimum:

All projects started by August 1.

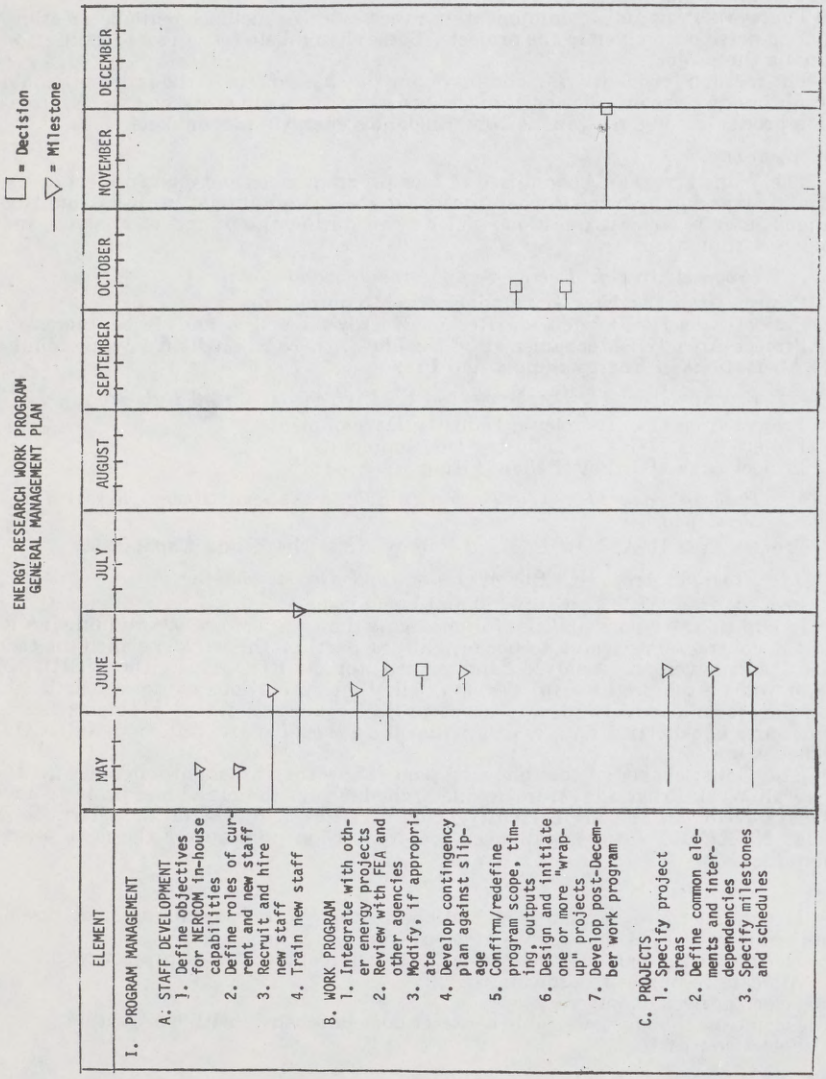
Preliminary results from all projects by September 30.

Final results from all projects by November 15.

Draft final reports from all projects by December 1.

Final reports from all projects by December 31.

Final work program report by NERCOM by early 1975.

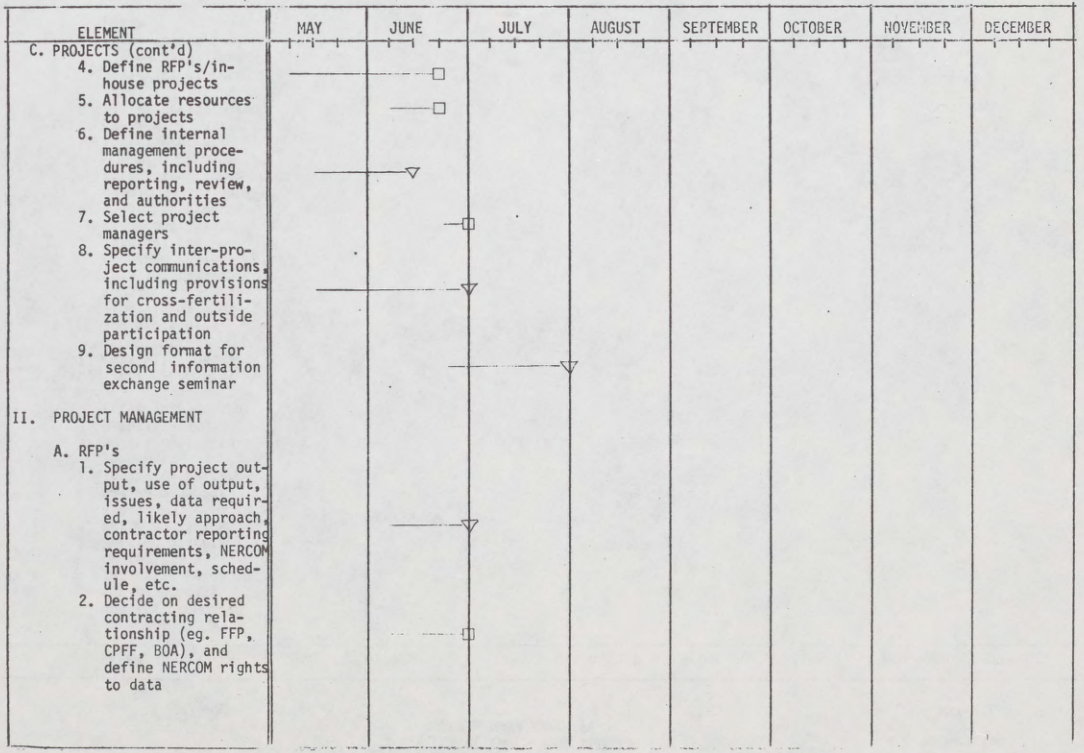


ENERGY RESEARCH WORK PROGRAM

GENERAL MANAGEMENT PLAN

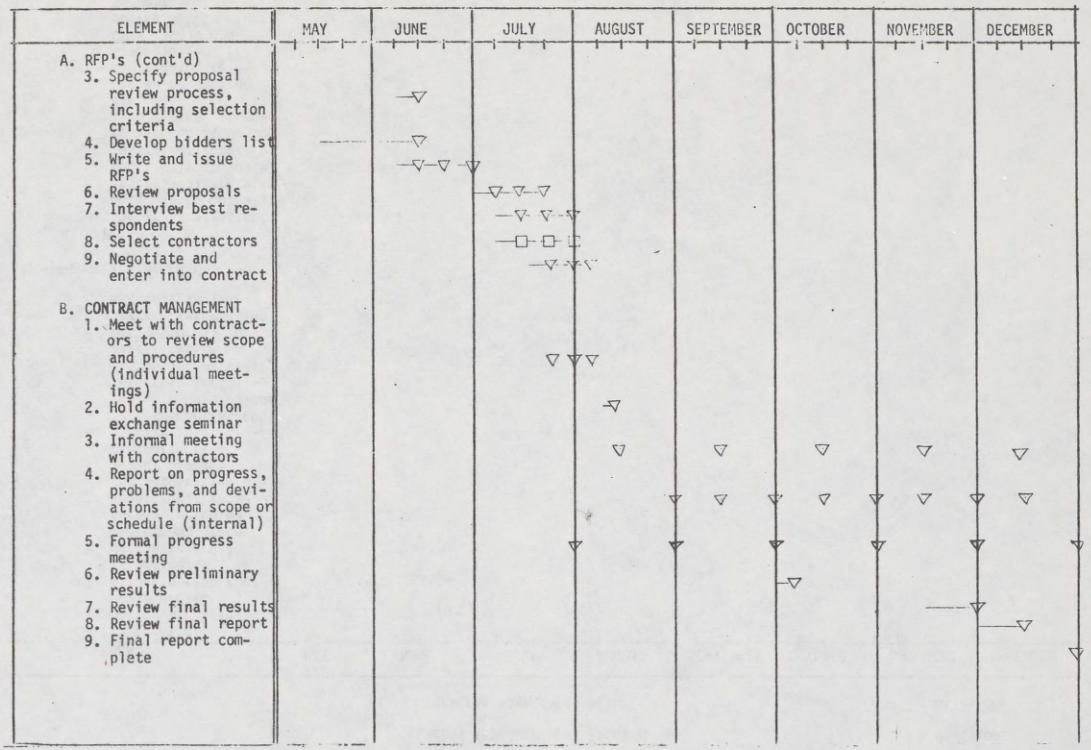
□ = Decision

—▽ = Milestone



ENERGY RESEARCH WORK PROGRAM
GENERAL MANAGEMENT PLAN

□ = Decision
—▽ = Milestone



ENERGY RESEARCH WORK PROGRAM
GENERAL MANAGEMENT PLAN

□ = Decision

◁ = milestone

ELEMENT	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER
III. PRODUCT MANAGEMENT								
A. STRATEGY								
1. Assess and detail application of results to policy						———	———	——— →
2. Develop strategy for communicating outputs to selected targets							———	——— →
B. REPORT								
1. Write NERCOM report, and design and develop other information materials								——— →
2. Distribute report and materials; present results to appropriate targets								→

(NOTE: These four tasks continue into 1975)

Project Area IA: New England Energy Requirements—

Purpose.—To develop a reliable consistent body of knowledge on past, current, and future energy demands in New England.

Project Area IB: Impacts of Recent Energy Shortages and Price Increases—

Purpose.—To develop an understanding of the effects on New England of the 1973–1974 energy shortages and price increases in terms useful for formulating programs for ameliorating the effects and/or preventing their occurrence.

Project Area IC: Mechanisms for Dealing With New England's Vulnerability to Aberrations in Energy Supply and Price—

Purpose.—To develop a set of mechanisms for use by local areas, states, the New England Region, or the federal government for either ameliorating the effects of short term fuel shortages and price increases or reducing New England's vulnerability to them.

Project Area IA: New England Energy Requirements

Purpose.—To develop a reliable consistent body of knowledge on past, current, and future energy demands in New England.

Task Structure

Task 1. *Material Balances.* Prepare material balances by state for three past years such as 1962, 1967, 1972, for the import and consumption of coal, specific petroleum products (including LPG) and natural gas showing deliveries to electric generating plants and to direct end use including transportation, industry, commercial, institutional and household uses. Show imports by ports and by source, and any in-transits and re-exports. Use natural units such as tons, barrels, standard cubic feet.

Task 2. *Power Plant Operations.* Prepare a record of power plant operation in these same years showing the consumption of nuclear, hydro and specific fossil fuels, and the output of electric power from central generating stations. Include as a reference point the output capacity of the stations. Show imports and exports of electric power by states and for the region.

Task 3. *Power Consumption.* Show the consumption of electric power in the above years by states and the entire region in end use categories such as transportation, industry, commercial/institutional and households.

Task 4. *Consumption Ratios.* Establish useful consumption ratios from the above data by states only, showing per unit consumption for the year related to output such as various fuels and electricity per household, per vehicle/mile, per unit production or sales value. Use natural units.

Task 5. *Determinants of Demand.* Associate significant changes in total or per unit fuel consumption with (1) economic and population changes; (2) increases in fuel prices; (3) changes affecting fuel supply (e.g. terminal capacity, sources of imports, and distribution networks); and (4) other important factors such as environmental regulations, technological advancements, and new capital investments in fuel burning facilities. Estimate the effects on economic growth of energy prices or supply factors. Where appropriate, develop this information in the context of a comparison between New England and the rest of the U.S.

Task 6. *Economic Forecasts.* Prepare forecasts of economic activity (e.g. value of shipments, value added, employment, unemployment, etc.) and population for 1974, 1980, and 1990 for the region and the individual states. Define and assume three general scenarios in which each state experiences: (1) no overall economic growth; (2) a "normal" rate of growth; and (3) a growth rate in excess of the recent past. (Overall growth might be defined as simply as annual change in employment, or more rigorously as change in a measure of state GNP; the measure selected should be justified on the basis of its utility to NERCOM and its member states). Within each overall growth scenario, assume that each state could pursue policies which encourage growth in one of three economic sectors (service, primary industry, light industry). Define the most reasonable mix of sector growth rates under each overall growth scenario and for each sector emphasis policy. Include the effects on a fourth sector which encompasses all other economic activities. For example, one state's array of growth rates might appear as:

Economic sector	Overall growth rate								
	0 percent			3 percent			5 percent		
Services	[1]2	0	0	[1]4	3	2	[1]6	5	3
Primary industry	−1	[1]1	−2	2	[1]3	2	3	[1]5	3
Light industry	−1	−1	[1]2	2	3	[1]4	3	5	[1]6
Other	0	0	0	3	3	3	5	5	5

[1] Annual growth rate by sector if growth is encouraged.

This forecasting effort should make maximum use of existing information, and should take into consideration existing economic development plans for New England and the apparent preferences of the states for various forms of development. A preliminary breakdown of the four economic sectors is shown in *Exhibit IA*.

Task 7. *Forecasts of Energy Demands.* Show the energy demands (by state) associated with these economic and population growth alternatives using the ratios developed in Task 4 and the determinants defined in Task 5. For the purposes of forecasting future energy demands, the consumption ratios should be predicted for the forecast period under various assumptions of technological change and demand reduction/conservation measures. These assumptions and their effects on the ratios should be made explicit. All historical and projected consumption ratios should be recorded for possible future use or revision. The energy forecasts should indicate the types of fuels used directly, and for generating electric power. Major areas of uncertainty in the forecasts should be discussed.

Task 8. *Electric Power Forecasts.* Prepare forecasts of required electric power generation capacity and output, and fuel mix. Indicate likely imports and exports of electric power. Discuss assumptions used and areas of uncertainty in the forecasts.

Task 9. *Supply Constraints.* On the basis of the demands for fuels identified in Task 7 and Task 8, define the constraints which must be overcome in order to guarantee an adequate energy supply at prices which are comparable to those paid by other regions of the U.S. Include estimates of refinery or distribution facility requirements.

Task 10. *Fuel Substitutes.* Develop estimates of the degree to which the consumption of petroleum-based fuels defined in Tasks 7 and 8 could be replaced by other fuels or other sources of energy. Include non-traditional sources such as solar power and the recovery of energy/fuel from solid waste. Discuss the feasibility and likely impacts of these substitutions.

Task 11. *Comments on Growth.* Comment on the growth assumptions of the most energy-intensive industries, and on reasons for growth or lack of it in specific sectors. What problems and probabilities are associated with the main scenarios, and what alternate growth scenarios or economic development patterns are logical? To what extent could heavy specialization in one or another sector be put forward as a desirable target for various states or parts of states?

Output.—A comprehensive but readable and understandable report on New England energy requirements, past and future, including a state-by-state assessment of fuel demands for a series of economic growth scenarios, which take into account differences in development policies among the six states.

Applications.—This information will provide the basis for appraisal of energy policy, economic effects, power plant needs, growth encouragement options, and other public policies which influence, or are influenced by, energy supply and demand. The results of this project area will provide a foundation for analyzing the benefits and costs of developing or expanding New England energy industry, and for anticipating energy facility siting issues. The forecasts will be used directly in Projects IIA, IIB, and IIC.

Exhibit IA

STANDARD INDUSTRIAL CODES (SIC) FOR NEW ENGLAND ANALYSIS

Services (*Low energy intensiveness, strong export possibilities*)

SIC	Title
15/17	Building contractors.
47	Transport services.
48	Communications services.
58	Eating & drinking places.
60	Banking services.
61	Credit agencies.
62	Brokers agencies.
63	Insurance companies.
67	Holding & investment companies.
70	Lodging places.
731	Advertising.
735	News syndicates.
739	Research, consulting, other business services.
78	Motion picture & TV.
79	Recreation & amusement places.
80	Medical & health services.
81	Legal services.
82	Education facilities.
84	Museums.
891	Engineering & architectural services.
892	Research activities.
893	Accounting, audit, bookkeeping services.
899	Other services.
91	Federal government functions.
92	State government functions.

Primary Industry (*Large scale, rather energy intensive, export oriented*)

SIC	Title
19	Ordnance.
20	Food & drink manufacturing.
2031	Canned fish and sea foods.
2032–37	Canned, dried, frozen fruits, vegetables, and seafoods (except canned).
21	Tobacco products.
22	Textile mills.
221	Cotton.
222	Man-made fibers, silk
223	Wool.
228	Yarn.
24	Lumber & wood products.
241	Logging.
242	Sawmills.
243	Millwork, plywood.
244	Wood containers.
26	Paper products.
281/9	Industrial chemicals, soaps, drugs, paint, etc.
29	Oil & coal products.
31	Leather products.
32	Stone, clay, glass.
33/4	Primary & fabricated metals.
35	Machinery.
36	Electrical equipment.
371	Motor vehicles.
372	Aircraft.
373	Ships & repairs.
374/9	Railroad equipment, cycles, etc.

Light Industry (Modest scale, less energy intensive, export oriented)

SIC	Title
23	Apparel design & manufacturing.
25	Furniture & fixtures.
27	Printing & publications.
30	Rubber & plastic products.
31	Leather products.
314	Footwear, except rubbers.
381	Engineering & scientific equipment.
382	Mechanical measurement & control devices.
383	Optical instruments & lenses.
384	Medical equipment.
385	Ophthalmic goods.
386	Photo equipment.
387	Watches & clocks.
391	Jewelry, etc.
393	Musical instruments.
394	Toys & sporting goods.
395	Office & art supplies.
396	Costume jewelry.
399	Miscellaneous manufacturing.

Other Functions (Varying energy intensiveness, local activities, with some export potential)

SIC	Title
01	Agricultural production.
07	Agricultural services & hunting.
08	Forestry & associated services.
09	Fisheries.
10/12	Metals mining, coal mining.
13	Oil & gas.
14	Minerals, stone & sand.
40	Railroad operation.
41	Mass transit operation.
42	Trucking & warehousing.
44	Water transport.
45	Air transport.
46	Pipeline transport.
49	Electric, gas & sanitary services.
50	Wholesale trade.
52	Retail building materials.
53	General retail stores.
54	Food retail stores.
55	Auto service stations & dealers.
56	Clothing stores.
57	Furnishings.
59	Other retail stores.
64/6	Real estate & insurance.
72	Personal services.
732	Credit reporting and collection.
733	Duplication, mailing & stenographic.
734	Building services.
736	Private employment agencies.
75	Auto repairs.
76	Other services.
86	Non-profit membership groups.
88	Private households.
93	Local government functions.

Project Area IB; Impacts of Recent Energy Shortages and Price Increases

Purpose.—To develop an understanding of the effects on New England of the 1973–1974 energy shortages and price increases in terms useful for formulating programs for ameliorating the effects and/or preventing their occurrence.

Task Structure

Task 1. *Sensitivity Indexes.* Within the SIC groupings used for the economic and demand analyses in Project IA (i.e. services, light industry, primary industry, all other), establish a preliminary order or index of sensitivity of the output, profitability, and employment of each sector to drastic short term changes in: (a) fuel prices; and (b) fuel supply. Where appropriate, state the sensitivity indexes in the context of New England compared to the rest of the U.S. Use the 1973–1974 experiences as guidelines for the magnitude of abrupt short term changes.

Task 2. *Empirical Study.* Analyze recent experiences in each of the six New England states, especially as to prices and supplies of heating oil, gasoline, and power plant fuel, to determine: (a) what actually occurred on a month-by-month basis to supplies and prices; and (b) what were the economic consequences of these occurrences. Specify and take into account the extent and effects of energy conservation measures. Compare these results to the sensitivity indexes and modify the indexes as appropriate. Where relevant, conduct these analyses in the context of New England versus the rest of the U.S.

Task 3. *Temporary Hardships.* Identify the economic sectors and people most severely affected by high prices and/or temporary shortages, including the magnitude and type of hardship, and the number and location of those affected. Identify and evaluate any local, state, or federal programs which were implemented as means for ameliorating these conditions.

Task 4. *Permanence of Economic Effects.* Discuss the degree to which the short term shortages and abrupt changes in fuel prices will cause, or have caused, permanent dislocations in state economies. Pay particular attention to downstream industries and goods and services produced for export from the New England region.

Task 5. *Impact Model.* Discuss the feasibility of developing a model for predicting the short (temporary) and long term (permanent) economic effects associated with temporary shortages in fuel supplies and abrupt changes in fuel prices. Suggest a design for such a model and outline the (a) use of output from it; and (b) reliability of output.

Outputs.—A complete assessment of the extent of the effects of the 1973–1974 fuel shortages and price increases, and set of relationships which might be useful for developing a predictive impact model.

Applications.—This information will be used for developing policies and mechanisms for ameliorating the negative effects of fuel shortages and price increases, and for evaluating some of the benefits associated with programs aimed at preventing their occurrence.

Project Area IC: Mechanisms for Dealing With New England's Vulnerability to Aberrations in Energy Supply and Price

Purpose.—To develop a set of mechanisms for use by local areas, states, the New England Region, or the federal government for either ameliorating the effects of short term fuel shortages and price increases or reducing New England's vulnerability to them.

Task Structure

Task 1. *Foreseeable Shortages and Price Increases.* Identify the nature, duration, and location of the possible fuel shortages and price increases for New England states for the remainder of 1974 and for 1975. Include in these forecasts estimates of New England's position relative to the rest of the U.S., and possible actions by the FEA which might alter the forecasts.

Task 2. *Price Effects Amelioration.* On the basis of the findings from Project IB, develop lists of mechanisms for ameliorating the effects of abrupt increases in fuel prices on those most affected personally and on economic activities most severely impacted. Include measures which could be taken by local, state, regional, and federal bodies (eg. rent supplements, special rates, pass-on charges, price equalization, etc.) and evaluate each on the basis of its effectiveness, feasibility, costs, and short and long term economic consequences which might be caused directly or indirectly by the measure.

Task 3. *Amelioration of the Effects of Shortages.* Using a framework similar to that developed for Task 2, develop and evaluate measures which could ameliorate the impacts of fuel shortages on individuals and on industry. Pay particular attention to those industries on which the individual state economies and other industries are most reliant.

Task 4. *Alleviation of New England's Vulnerability.* Identify and evaluate policies and actions which could be implemented by the New England states, the region as a whole, or the federal government to help prevent the occurrence of drastic fuel shortages and/or unusual increases in fuel prices. The evaluation should include, but not necessarily be limited to: (a) develpment of New England oil refining capacity; (b) development of potential New England offshore oil reserves; (c) expansion of New England's capacity for securing and distributing coal and various forms of gas fuels; (d) expansion of nuclear power plant capacity; (e) use of solid or liquid wastes as sources of fuel; (f) application of solar energy technologies; and (g) a national price equalization program. The evaluation should cover the significant benefits and costs associated with each mechanism, and should assess the feasibility of each.

Outputs.—Identification and evaluation of alternatives for preventing fuel shortages and abnormal price increases or for ameliorating their effects should they occur.

Applications.—This information can be used directly by NERCOM or the states for developing programs for dealing with short term energy problems. It will also be used for helping to decide on regional policies regarding indigenous energy industry development and federal programs.

PROGRAM AREA II: DEVELOPMENT OF AN INDIGENOUS ENERGY INDUSTRY

Project Area IIA: Petroleum Industry Development—

Purpose.—To determine:

1. The effects of developing a petroleum refining industry in New England.
2. The effects of offshore oil production in New England.
3. The effects of *not* developing a petroleum industry in New England.
4. Policies which would encourage and properly control a petroleum industry in New England.

Project Area IIB: Gas Industry Development—

Purpose.—To develop action alternatives for a regional natural gas policy including traditional natural gas from present as well as from anticipated sources imported liquefied natural gas, and the synthetic natural gas produced from coal or petroleum derivatives, and to identify the particular impacts associated with the siting and operations of natural gas facilities.

Project Area IIC: Power Plant Siting—

Purpose.—1. To develop and structure a comprehensive information and analytic base from which sound power plant siting decisions can be made.

2. To develop and recommend procedures for an operating regional power plant siting policy consistent with regional goals for economic development, environmental protection and security of the economy.

3. To develop decision guidelines for power plant site location for the various public sector decision makers and responsible public interest groups.

Project Area IIA: Petroleum Industry Development

Purpose.—To determine:

1. The effects of developing a petroleum refining industry in New England.
2. The effects of offshore oil production in New England.
3. The effects of *not* developing a petroleum industry in New England.
4. Policies which would encourage and properly control a petroleum industry in New England.

Task Structure

Task 1. *Background Information on Industry.* Review existing data and studies on a petroleum refining industry in New England and on offshore oil production. This would include federal, state and regional, and university sources as well as consultant and oil company reports.

Task 2. *Basic Data on Offshore Oil.* Develop basic data for offshore oil and gas production, including:

a. Estimated quantities of gas and oil reserves, and likely rates of extraction (barrels or million cubic feet per year).

b. Time schedules for exploration and production.

c. Manpower requirements.

d. Facilities requirements.

Task 3. *Refinery Models.* Develop models to be used for studies on New England Petroleum Refining Industry for two general refinery locations: (1) coastal; and (2) inland. Assume two conditions of crude supply: (1) foreign crude; and (2)

domestic (offshore) crude. It can further be assumed that the crude would contain medium to high amounts of sulfur. Specifically:

a. Determine the basic crude oil processing capacity for one refinery with processing units varied to provide two or three different product slates. At least one of the product slates should provide necessary feedstocks for a petrochemical complex.

b. Develop the approximate economics of each of above cases including investment costs, land requirements, construction manpower, and operating costs including personnel requirements.

c. Define other facilities required for one to four refineries. This includes crude receiving facilities, crude pipelines, onshore storage of crude and product distribution pipelines.

d. Develop the approxim te economics for facilities defined in "c" including investment cost, land requirements, construction manpower, and operating costs including personnel requirements.

e. Develop basic data for the facilities defined in "a" and "c" which will be required to determine environmental and economic effects. This would include air, water, solid waste, noise, and land use implications, as well as the effects on other industries.

Task 4. *Petrochemical Facilities Models.* Develop models for analyzing (1) production of ethylene and derivatives; and (2) fertilizer production. For each type of facility:

a. Develop the approximate economics, including investment cost, land requirements, construction manpower and operating costs including personnel requirements.

b. Develop the basic data which will be required to determine environmental and economic effects. This would include the same parameters as those used for the refinery models.

Task 5. *Economic Effects.* Determine economic effects of a petroleum industry in New England. This analysis should include at least three major cases: (1) various refining capacity without offshore crude supply; (2) various refining capacity with varying rates of offshore crude supply; (3) various rates of offshore crude production without New England refining capacity. The analysis should cover the base refinery cases and each petrochemical case and approximate how these effects would change as the number of refineries were increased to four. The areas which are to be assessed include effects on:

a. Energy cost and supply.
b. Supporting industry.
c. Downstream industry.
d. Direct and indirect employment (and earnings).
e. Tax benefits—local and state.
f. Services costs (municipal and state).

Task 6. *Environmental Effects.* Determine the environmental effects of a petroleum industry in New England, using the same cases as described in Task 5. Include effects on:

a. Air quality.
b. Water quality.
c. Solid waste loads.
d. Noise pollution.
e. Land use.

These effects are to be determined for the primary industry facility segments, including:

Deepwater terminals.
Crude oil pipelines to shore.
Coastal storage.
Crude oil pipelines to refineries.
Refineries.
Product pipelines and terminals.
Petrochemical facilities.
Offshore rigs and receiving/processing/transfer facilities.

Task 7. *Effects on Other Industry.* Determine the effects of alternate forms of a petroleum industry on other industries which rely on uses of land and ocean resources, including impacts on:

a. Tourism and the tourist industry.
b. The fishing industry.
c. Recreation.

Task 8. *Crude Dependency Risks.* Determine and assess the risks associated with the development of an indigenous refining capacity which relies on foreign sources of crude. Discuss the implications of these risks to: (1) the oil companies; and (2) governmental bodies.

Task 9. *Facilities Siting Guidelines.* Develop guidelines for the siting of facilities. These will be based on land use implications, environmental effects, and economic considerations, and will be done for:

a. Deepwater terminals.
b. Shore storage facilities.
c. Refineries.
d. Petrochemical plants.
e. Crude and product pipelines.
f. Offshore rigs and receiving/processing/transfer facilities.

Task 10. *Impacts of "Do Nothing".* Determine the effects of not developing a New England petroleum industry on:

a. Energy supply—particularly its reliability.
b. Energy cost.
c. Economic development and employment.
d. Environmental quality.
e. Taxes.

Outputs.—A comprehensive analysis of the facility requirements, economic and environmental effects, and siting criteria for alternative forms of an indigenous petroleum industry, including data and information which can be used for evaluating various mixes of facilities across the region.

Applications.—This information will be useful for identifying and evaluating alternative courses of action relative to the supply of petroleum products in New England, including policy decisions on:

1. Number and type of refineries.
2. Number and type of petrochemical plants.
3. Port development and unloading, processing and storage facilities.
4. Pipelines and distribution terminals.
5. Offshore drilling (when, where, how much?)

The information will also provide a foundation for analyzing various specific sites for facilities.

PROJECT AREA IIB: GAS INDUSTRY DEVELOPMENT

Purpose.—To develop action alternatives for a regional natural gas policy including traditional natural gas from present as well as from anticipated sources, imported liquefied natural gas, and the synthetic natural gas produced from coal or petroleum derivatives, and to identify the particular impacts associated with the siting and operations of natural gas facilities.

Task Structure

Task 1. *Current and Future Supply Facilities and Consumers.* Outline existing and future supply and demand in terms of the location of current and future (proposed) pipelines, terminals, and plants. Describe the current production of gas, by type, in volume per year and dollar value. Identify major consumers, including all companies which buy for distribution, as well as end users (describe use as fuel or chemical feedstock, and include volumes and dollars by type of consumer). Identify any facilities which are in the permit application stage or under construction. Include an estimate of the location of new sources of traditional natural gas, including offshore drilling.

Task 2. *Future Supply and Demand.* Using the results of Project IA as a starting point:

a. Identify possible changes in future sources of supply of raw materials and changes in methods of transporting them. Consider distributive issues within the region and nation as well as uncertainties in international sources.

b. Enumerate possible changes in future demand based on growth factors as well as decisions to change fuel inputs. Include an analysis of the causes of projected changes, and descriptions of the methods of facility conversion.

Task 3. *Encouragement of Supply and Demand.* Define policies which may encourage the availability and use of natural or synthetic gas. Include:

a. Enumeration of each governmental level with its respective authority regarding control of gas importation; production, or physical conversion; transmission; and use. Identify the methods of control (such as regulations, standards, permits, etc.) use by agencies at the various levels of government.

b. Identification of other usable methods of control, including governmental controls such as pricing policy, tax incentives, environmental impact statements, etc., and public methods of control such as hearings.

c. Determination of which methods of control, and what public policies and/or industry actions encourage the availability and use of gas.

Task 4. *Fuel Comparisions.* Compare all types of natural gas with other fossil fuels. This comparison should include:

a. Enumeration of basic processes and unit operations for the production and distribution of each.

b. Costs and BTU's/unit.

c. Environmental impacts and economic benefits associated with each process and operation.

Task 5. *Decision Guidelines.* Develop guidelines to be used in decision processes for selection of the form of gas as well as for locating facilitities and distribution systems. The guidelines should cover factors such as the origin of gas, gas transport/transmission, production facilities, storage and handling. Issues such as environmental impacts, economic considerations, social welfare (including health and safety) and aesthetics should be addressed in a framework which facilitates the evaluation of policies which affect the availability of gas as a fuel in New England.

Task 6. *Development of Alternatives.* Convert the information from the preceding tasks into alternative courses of action which present strategies for increasing the supply of, and demand for, natural gas in New England. The economic and environmental benefits and costs of each alternative should be estimated versus a base case of status quo. The feasibility of each alternate should be discussed in terms of cost, technology, and change in existing institutional structures or behavior patterns.

Outputs.—The outputs of this project include:

1. Background knowledge of present and anticipated plants, terminals, pipelines and consumers.
2. Projections of future supply and demand.
3. Methods of control for each level of government.
4. Comparison of fuels emphasizing economic and environmental considerations.
5. Guidelines for siting of plants.
6. Evaluation of alternative strategies for increasing gas supply and demand.

Applications.—The information from this project will serve three purposes. First, it provides a basis for evaluating state and regional policies toward encouraging more supply of, and demand for, natural gas in New England. Second, the decision guidelines will be helpful to organizations which are responsible for making decisions on facilities and/or distribution system design and location. Finally, sufficient data will be developed for performing trade-off analyses of one fuel versus another.

Project Area IIC: Power Plant Siting

Purpose.—1.—To develop and structure a comprehensive information and analytic base from which sound power plant siting decisions can be made.

2. To develop and recommend procedures for an operating regional power plant siting policy consistent with regional goals for economic development, environmental protection and security of the economy.

3. To develop decision guidelines for power plant site location for the various public sector decision makers and responsible public interest groups.

Task Structure: Phase I (Background and baseline information)

Task 1. *Review of Demand Forecasts.* Review forecasts of electricity demand for the region. Determine the applicability of inputs from Project IA, and modify or select appropriate data.

Task 2. *Review of Supply Estimates.* Review estimates of the likely electricity generation capacity and mix of energy sources (e.g. coal, oil, nuclear, hydro, and recovered resources for 1980 and 1990. Specifically:

a. Review the outputs from Project IA and modify or select appropriate data.

b. Evaluate the reliability of forecast assumptions through contact with FPC, AEC and other appropriate regulatory agencies.

c. Secure and analyze additional inputs from state DPU's, NEPOOL, etc. on projected capacity and type.

d. Develop a base of information on projected construction time schedules for additional New England power generation capacity.

Task 3. *Facility Forecasts.* Estimate number, capacity and types of new power plants required to meet increased regional demands for electricity and reasonable demands for exported power.

Task Structure: Phase II (Decision guidelines for powerplant site location)

Task 1. *Site Decision Parameters.* Inventory and analyze powerplant site selection decision making parameters. The sub-tasks include:

a. Search literature, academic, public and private agency sources for information categorized relative to:

1. Environmental/ecological parameters.
2. Economic, land use, aesthetics, social, and transportation parameters.
3. Institutional and procedural parameters.

(NOTE: The outputs of Project IV A will be helpful for the identification and analysis of institutional parameters.)

b. Select those parameters which are relevant to the New England region.

Task 2. *Development of Parameter Matrix.* Develop a matrix which relates the decision parameters to various types of powerplants and sites. This task should include three parts:

a. Correlate the parameters with the six basic powerplant locations, e.g. oceanic, estuarine, riverine, lake, reservoir, and other (e.g. non-contiguous to water) zones. The parameters should also be correlated with type of powerplant (e.g. those which rely on fossil fuels, fuels recovered from solid waste, nuclear reactions, or water as their source of energy.) The sample matrix shown in Attachment IIC illustrates the framework for this analysis.

b. Using the information in the matrix, develop a framework for evaluating the *cumulative* impacts of mixes of power plants from regional perspective, and provide appropriate examples of the approach.

c. Define a sample mix of competing land uses for the various types of site locations.

Task 3. *Empirical Evaluation.* Field test the proposed site compatibility scheme against existing plants and modify the framework accordingly.

Task 4. *Transmission Line Decision Parameters.* Inventory and analyze transmission line location decision making parameters, including:

a. Definition of parameters which relate such factors as load requirements to power plant site location, demand location, and to environmental and economic considerations.

b. Identification of existing and potential transmission corridors, and development of a framework for evaluating them (eg. visual landscape analysis identifying land forms, physiography, and vegetative patterns to limit visual sensitivity and exposure).

c. Determination of parameters for the comparison of above-ground and underground transmissions, including safety, expense, right-of-way requirements, and visual impact.

Task 5. *Empirical Evaluation.* Field test the framework for evaluating corridors and comparing transmission techniques against existing transmission line locations.

Task 6. *Site Selection Decision Guidelines.* Develop comprehensive site location decision guidelines to serve as a basis for a handbook for evaluating the compatibility of a site for usage as a power plant location, and for evaluating transmission corridors and techniques. This task should include:

a. Translation of the outputs from Tasks 1–5 into guideline formats.

b. Design of a handbook format and integration of appropriate decision making information from the matrix methodology and other inputs. A chapter of the handbook might include:

1. Power plant descriptions: Types, capacity, and general characteristics.
2. Plant site location criteria.
3. Decision making parameters: Environmental/ecological; land use, aesthetics, economics, transportation; institutional and procedural.
4. Matching power plants with compatible sites.
5. Transmission line decision making parameters.
6. Framework for integrated trade-off analysis.

Outputs.—Guidelines and a handbook for evaluating the compatibility of a given type of power generating facility with a site and the area surrounding the site, and for assessing the impacts of the facility on the resources, activities, and welfare of local communities, the state, and the region as a whole. Similar guidelines are developed for transmission line location. Each set of guidelines is supported by information which defines the scope of the siting problem in terms of likely expansion of power generating capacity over the next twenty years.

Applications.—The information generated during this project can be used:

1. By public utility commissions and other involved agencies to evaluate power plant siting, and/or transmission line location, issues as they arise.
2. For developing regulatory legislation which requires that certain criteria be met during the process of planning new power generation or transmission facilities.
3. For developing an overall regional power supply/facility siting policy.

ATTACHMENT II C

DECISION PARAMETERS AND SITE LOCATION MATRIX

[Decision parameters]

(A) Environmental/ecological	(B) Economic, land use, aesthetic, social, transportation, etc.	(C) Procedural, institutional
Airshed standards	Demographics	Regulations.
Meterology	Economic activity	Regulatory bodies.
Biota	Community structure and goals	Agencies and boards.
Geology	Adjacent land use	Ordinances.
Vegetation	Topography	Easements.
Biophysical character of water resource	Land values	Interest groups.
Water circulation	Buffers	Master plans.
Sediments	Multiuse	Do.
Tides and currents	Transportation access	Do.
Fisheries	Master plans	Do.
Radiation	Downstream water	Do.
Wastes	do	Do.
Do	do	Do.
Et cetera	Et cetera	Et cetera.

MATRIX—SITE LOCATION/PARAMETER (SELECTED FROM ABOVE)

Power fuel type and capacity	Ocean			Estuary			River			Lake			Reservoir			Other		
	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C	A	B	C
Fossil fuel																		
Nuclear																		
Hydro																		
Recovered fuel																		

PROGRAM AREA III: NEW ENGLAND'S ROLE IN NATIONAL ENERGY RESEARCH AND DEVELOPMENT

Project Area IIIA: New England Energy Research and Development Needs and capabilities—

Purpose.—To determine New England's specific energy research and development needs and capabilities; and to design and implement a program for exposing these needs and capabilities.

Project Area IIIA: New England Energy Research and Development Needs and Capabilities

Purpose.—To determine New England's specific energy research and development needs and capabilities; and design and implement a program for exposing these needs and capabilities.

Task Structure: Phase I (Background study).

Task 1. *Information System Design.* Design an information system which provides for updating and for cataloging R&D information in a form which is useful to organizations which seek R&D resources. Include in the design:

a. Determination of data requirements.
1. Type of data to collect.
2. Method of classification.
3. Selection of data users.
4. Method of meeting needs of data users.
b. Selection of data sources.
1. Federal agencies which sponsor energy research.
2. State and regional agencies which sponsor energy research.
3. Profit and non-profit organizations which sponsor energy research.
4. Secondary sources, including bibliographies.
c. Methods for formatting and disseminating information.

Task 2. *Information Collection.* Perform a search of the data sources to determine ongoing or completed relevant energy research. Note those projects which relate directly to New England and/or which are being performed by New England-based organizations.

Task 3. *New England Energy R &D Needs.* Identify the types of research which are most relevant to New England's needs, including research on local, state, regional, and national-level problems in areas such as energy supply and demand, energy production and distribution facilities, environmental aspects of energy facilities, relationships between energy supply and demand and economic development, and new energy-related technologies. Compare these needs to the list of projects developed during Task 2 and determine the gaps which exist. List these gaps, and suggest what agencies might best fill them. Also suggest strategies for stimulating them to sponsor the research.

Task 4. *Capability Inventory.* Develop an inventory of New England capabilities in energy R&D, using the data from Task 2 and a classification scheme which identifies the specific expertise and experience of academic institutions, governmental organizations, industrial groups, private research organizations, and other appropriate organizations. Include a level of detail which is appropriate to the intended use of the information. Identify the problem areas in which each resource is most suited to perform research. Note those organizations whose capabilities are particularly applicable to problems of national scope and problems unique to New England. Perform validation checks of the resulting classification and inventory.

Task Structure: Phase II. (Program development)

Task 1. *Method of Presentation.* Determine the best method for presentation of the R&D capability inventory, including provisions for updating and subsequent reporting. Alternatives might include:

a. Publication.
1. Federal level through NTIS.
2. Regional or state level through mailings.
3. Private publisher.
b. Conferences.
c. Computer system.

Task 2. *Implementation.* Implement the selected communications program.

Outputs.—The outputs of this project include: (1) a report identifying the energy research needs of New England, the degree to which they are being satisfied, and strategies for filling apparent research gaps; (2) an inventory of the capability in New England for specific types of energy research including that relevant to the needs of New England and national needs; and (3) a program which communicates information on New England energy R&D capabilities to potential users of these resources.

Applications.—This information will be used to help develop mechanisms for focussing regional and national energy research and development programs on the needs of New England, and for assuring that New England's unique capabilities in R&D are recognized and brought to bear upon problems of regional and national interest.

PROGRAM AREA IV: ENERGY POLICY AND DECISION-MAKING

Project Area IV A: Institutional and Legal Issues

Purpose.—To develop an understainding of the legal and institutional implications, requirements, and opportunities associated with New England energy management, and to suggest the relationships between energy policy and the development policies of the region and its states.

Task Structure. Phase I (Background study)

Task 1. *Definition of Legal and Institutional Factors.* Define legal, institutional and jurisdictional factors which affect energy production and transmission. Review and summarize current and proposed federal, state and local legislation which directly or indirectly applies to energy production and distribution, including:

1. Power plant siting regulations.
2. Offshore oil production regulations.
3. Deepwater ports regulations.
4. Gas facilities regulations.
5. Transmission regulations.
6. Environmental legislation.
7. Economic legislation.

Review jurisdictional and institutional authorities in order to identify primary and secondary institutions, duplications of effort, and opportunities for cooperation. Include in this review:

1. Federal agencies.
2. State agencies.
3. Local agencies.
4. International agencies.
5. Private organizations (eg. NEPOOL)
6. Other countries (eg. Canada)

Review relevant foreign models and experiences to determine those which are useful to New England and which deserve further study.

Task 2. *Institutional and Legal Conflicts.* Identify existing and potential institutional, jurisdictional and legal conflicts, including:

a. Overlapping or conflicting legislation.
b. Gaps in legislation and/or institutional or jurisdictional authorities.
c. Site certification and construction permit inequities.
d. Inconsistent public review procedures, including hearings.
e. Interstate differences.

Task 3. *Agency Responsibilities.* Identify agency responsibilities for energy-related environmental and economic management including those which influence or control:

a. Energy demand and supply.
b. Economic development, employment, and growth potential.
1. Regional, inter-regional.
2. State, interstate.
3. Local.
4. International.
c. Design of energy production, distribution and transmission systems.
d. Availability of fuels.
e. Monitoring and surveillance of site selection, facility construction, operations and exploration.

Task Structure: Phase II (Application of background study information to policy questions)

Task 1. *Evaluation of Issues and Roles.* Evaluate the legal and institutional issues and roles related to the various types of energy producing facilities and distribution systems. Cover areas such as:

a. Adequacy of existing legislation and institutional forms.
b. Opportunities for new or revised legislation.
c. Opportunities to establish new institutional forms (for example: Mississippi-Alabama authority; creation of regional Energy Facilities Siting Panel which could be advisory and/or regulatory).
d. Issues peculiar to energy transportation, transmission, or distribution at the various levels of jurisdictions. (i.e. non-facilities issues)

Task 2. *Required Authorities.* Identify the authorities required for energy exploration, production and distribution. Develop criteria for the formulation of institutional guidelines and administrative procedures relating to:

a. Deepwater ports.
b. Loading and unloading facilities.
c. Product pipelines and distribution terminals.
d. Offshore drilling.
e. Gas production or distribution facilities.
f. Power generating facilities.
g. Transmission lines.

Task 3. *New Institutional Forms.* Suggest the best alternatives for new institutional forms. Include an outline of factors such as:

a. Nature of authority; by whom created; public/private.
b. Composition of agency.
c. Financing.
d. Legal role: Substantive and procedural.
e. Management role.

Task 4. *Institutional and Legal Planning Conference.* Design and conduct an institutional and legal policy planning conference. The conference should include workshops on the institutional and legal issues related to energy supply and demand, production and distribution facilities, and associated areas (e.g. land use and environmental legislation, state growth policies, and economic legislation).

Task Structure: Phase III (Development policy considerations)

Task 1. *Development Policy/Energy Supply Linkages.* Define the linkages between regional growth and development policies and alternative energy supply strategies through a process which includes:

a. Review of the results of the energy research and policy formulation work program with representatives of individual states, particularly the supply/demand forecasts, estimates of econom c consequences, land use implicatıons of alternate supply strategies, and facility requirements.

b. Identification and reconciliation in a regional context of the likely development preferences of the six states.

c. Identification of the degree to which alternative energy supply strategies reinforce, or are in conflict with, state, regional, and federal development preferences.

Task 2. *Role of Energy Policy in Overall Development Policy.* Suggest how energy supply strategies can be used to help formulate and implement regional and/or state development policies, with particular attention given:

a. Interfaces with other resources management programs (water, land, minerals, resource recovery, etc.)

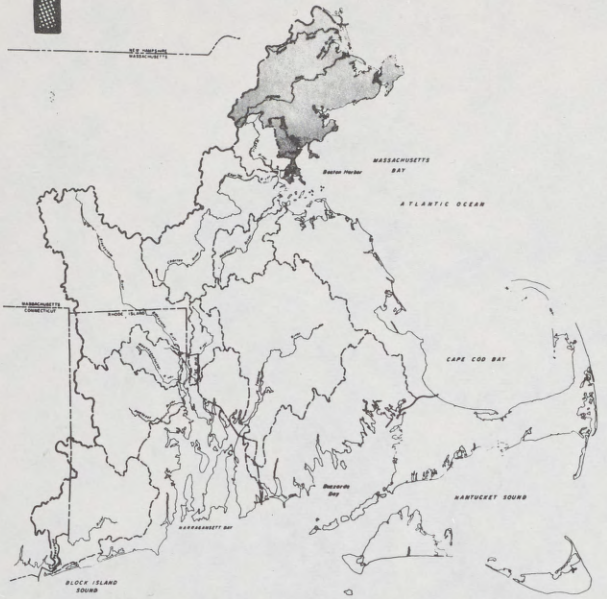
b. Institutional relationships.

c. Legislative requirements.

Outputs.—A complete analysis of the forms and functions of institutions and laws which directly or indirectly influence New England energy policy, including opportunities for new legislation and/or institutional forms and suggested interfaces between energy policy and development policy in the region.

Applications.—This information will provide a foundation for developing strategies for implementing New England energy policies through legislation and/or institut.onal arrangements.

1 IPSWICH-NORTH SHORE PLANNING AREA



SOUTHEASTERN NEW ENGLAND WATER AND RELATED LAND RESOURCES STUDY

NEW ENGLAND RIVER BASINS COMMISSION

DRAFT FINAL REPORT

SEPTEMBER 1974

Overview

Located in the northeast corner of Massachusetts, the Ipswich-North Shore planning area covers 406 square miles (259,588 acres). It contains five major watersheds: the Ipswich, Parker, Saugus-Pines(2), and Danvers River Basins. The combined length of the main stems of these major rivers is approximately 69 miles. They flow to the Atlantic through flat or gently rolling terrain, generally less than 200 feet in elevation. Inland wetlands are abundant, and numerous small lakes and ponds are scattered throughout the region.

The shoreline of this planning area - 130 miles long - is the third longest in the SENE region. Harbors and promontories define an irregular coast along its entire length. While long sandy beaches comprise the northernmost section of coastline, the central shore is characterized by rocky headlands, pocket beaches, and bluffs. The southern shoreline is composed of rocky shores, bluffs, and eroding beaches.

Towns in the Ipswich-North Shore planning area are as follows:

Beverly
Boxford
Danvers
Essex
Georgetown
Gloucester
Groveland
Hamilton
Ipswich
Lynn
Lynnfield
Manchester
Marblehead
Middleton
Nahant
Newbury
Newburyport
North Andover
North Reading
Peabody
Reading
Revere
Rockport
Rowley
Salem
Saugus
Swampscott
Topsfield
Wakefield
Wenham
Wilmington
Winthrop

Classification of these towns by town group may be found on the "Actions" maps at the end of this chapter.

Highlights

In order of importance, these are the key resource opportunities and problems in the Ipswich-North Shore planning area:

- If properly managed and developed, there are enough in-basin water resources to meet 1990 needs;
- Natural valley storage areas are effectively restraining flood flows, but are threatened by urban development;
- Water and land resources can provide recreational opportunities to meet some Boston metropolitan area needs;
- Water quality degradation, already a problem in southern towns, could lessen the usefulness of potential water supply and recreation resources in northern parts of the planning area.

Discussion

The forests, ground water resources, recharge areas, wetlands and surface water in northern towns currently interact to provide adequate local water supplies. Ground water resources, a common source of water supply in northern towns, are lacking in Cape Ann towns and most southern towns are already served by MDC. Future water supply needs for most of these northern towns can be met by the proposed Reservoir 30-B which, in turn, can be supplied by flood flows from the Ipswich River as long as ground water withdrawal does not significantly lower streamflow and the river's water quality is maintained or improved. The Ipswich River flow is already decreased by diversions out-of-basin.

With respect to urban and non-urban land use, flood plains and wetlands provide enough natural valley storage, particularly in Wenham, Hamilton and Topsfield (also good wildlife habitat) to avoid flood damages if these lands are protected. Damage now is confined to Wilmington and Ipswich. Coastal flood damages and erosion are problematic north of Cape Ann towns.

Because this basin planning area is close to Boston and it has high quality, nondeveloped land, a significant portion of recreational demand from the urban core could be satisfied in this basin. The northern basin in particular has many rivers, ponds, and beaches, wetlands and estuaries. A major recreational opportunity could be provided by designating the Ipswich River a state scenic river. The southern portion of the basin planning area, because of its land limitation, would have to depend on intensive recreation by expanding existing facilities. More efficient utilization of the limited boating facilities could be achieved by fore and aft mooring techniques. Excellent existing beaches have expansion and improvement potential to better meet local and out-of-basin demands.

To ensure future water supply, maintain outdoor recreation resources, and fish and wildlife habitat, maintaining or improving water quality above existing discharges is important. In general, the basin does not suffer from major industrial pollution sources. Primary coastal water quality problems stem from municipal combined sewers and urban runoff, particularly at the mouth of the Saugus-Pines Rivers in Lynn. Expanded sewering will be required to control water quality. Sewers could also be used to control development patterns and therefore maintain existing open lands. These land use controls can enhance the recreation opportunities, particularly if water quality is improved. Since basin soils are generally unsuitable for septic tanks, poorly sited dumps and landfills are another source of water quality degradation. In the southern sectors of the basin planning area connections to the MDC and the South Essex Sewer District from the Ipswich River watershed diverts water from that basin to coastal waters. Drawdown resulting from these sewer diversions can pose significant summer low flow problems in the Ipswich River.

Recommendations

1 • Regional Planning Agencies and towns in the Ipswich-North Shore area with the Environmental Protection Agency and the Division of Water Pollution Control should re-evaluate the array of existing sewer plans with the intent of providing flexibility to expand capacity now in anticipation of higher urban densities after 1990.

2 • Department of Community Affairs and Department of Natural Resources should provide financial and technical assistance to planning area Regional Planning Agencies and the municipalities in order to enable them to undertake the joint preparation of fifty year time-phase sewer development plans and capital programs. These plans should take into account in addition to wastewater facilities, land use controls in order to encourage future concentration of growth in these areas. Each municipality should adopt the plan and capital program and undertake implementation through annual capital budgets, and through necessary amendments to their zoning by-laws. Regional Planning Agencies and the state, through the A-95 review process should set up procedures to give automatic approval to those local and state capital projects which implement the time-phased plans.

3 • The state legislature in concert with towns, regional planning agencies, and state agencies should establish policies to encourage urban development in already developed areas within the Route 128 to permit maximum use of existing water, sewers, and transportation services. Planned unit development and the cluster principle should be encouraged elsewhere to maintain as much as possible critical environmental areas, forests, wetlands and best wildlife habitat areas in order to stem wholesale destruction of the fabric of community life in the Ipswich-North Shore area.

4 • Towns, conservation commissions, planning boards and the state Department of Natural Resources should protect and leave undeveloped those areas in SENE map category A (Plate 1). Included are water bodies and beaches. Also included are wetlands (both coastal and inland) and well sites which are currently under regulation (additional recommendations on wetlands are included in the Section "Living with the Forces of Nature"). Protection should be by acquisition, easement, zoning, tax incentives, transfer of development rights, and other tools for controlling land use.

5 • Town conservation commissions, planning boards, the state Department of Natural Resources should protect undeveloped areas in SENE map category B (Plate 1). Included are flood plains, proposed reservoir sites, Class I and II agricultural soils, unique natural and cultural sites. Protection should be by methods similar to those described above for category A lands.

6 • Towns carry out detailed studies where they have not already done so in order to channel growth to SENE mapped categories C, F, and G and to a limited extent on available areas in E.

C-Areas Critical resource areas that do not need protection if at low density (R5) or if protected by suitable planning controls or sewers they may be developed at a higher density. Includes land with severe tank limitations, high landscape quality, high yield aquifer, best upland wildlife habitat, steep slopes.

F-Areas Land with soils of moderate septic tank limits.

G-Areas Land with soils of little or no septic tank limits.

E-Areas Existing urbanized lands.

7 • The town of Wilmington should maintain high quality water in the antidegradation stretches of the Ipswich River by the provision of additional sewer service from the Metropolitan District Commission sewer district and by connection to the North Reading sewer system.

8 • The 3,345 acres of land suitable for development with septic tanks should be permitted to developed using that technology in order to provide a range of housing opportunities and diversity in the character of development.

9 • Town conservation commissions and planning boards and the state Department of Natural Resources should maintain in their natural state for recreational use the 818 acres of C-category developable lands which should not be built upon in order to retain groundwater supplies, high quality landscape or high upland wildlife habitat through outright purchase, easements, or zoning or other applicable tools for controlling land use.

10 • Department of Natural Resources and Metropolitan District Commission should undertake a cooperative acquisition program of the 1715 acres of ledge areas in order to provide additional outdoor recreation areas, particularly in areas close to the metropolitan area such as Saugus and North Reading.

11 • Department of Natural Resources should give high priority to designating the Ipswich River as a recreation and scenic river in order to protect the shoreline from private development in Peabody and Danvers.

12 • Department of Community Affairs should provide financial and technical assistance to the six municipalities to review and make adjustments in their industrial and commercial zones of their by-laws in order to assure that the locations and development requirements are compatible with the land and water resources of critical environmental concern (A, B, and C map categories on Plate 1).

13 • Department of Natural Resources and the affected municipalities should purchase, obtain easements, or zone all areas of coastal influence in categories A and B in order to protect them from development.

14 • The state should give further tax relief to lands maintained in active agricultural use, especially those farms operating on prime agricultural land.

15 • Department of Natural Resources and the municipalities should purchase, obtain easements or zone for recreation purposes the 11,895 acres in ledge and the 4,993 acres of C-category develop able lands which should not be built upon in order to retain groundwater supplies, high quality landscape or high upland wildlife habitat.

16 • No special actions beyond those undertaken for the basin as a whole are proposed.

17 • Land use in these recharge areas should be strictly regulated. Facilities or activities hazardous to ground-water quality such as highway deicing salt storage and dumps should be restricted.

18 • Enforce more vigorously existing requirements concerning flood plain development, public health regulations concerning water table levels and soils characteristics for development.

19 • Permissible land uses be restricted to those of R5 density (1 dwelling unit every 3 acres or more) until it can be proven that higher densities could be tolerated without taking additional precautions such as sewering the area.

20 • Development of recharge basins should be considered in a number of areas in this planning area. (Towns are shown on town group plan.)

21 • A regional water authority with responsibility to develop and plan for water supply and for water quality functions should be established in this planning area.

22 • All towns institute water conservation practices as a precaution against increasing future dependence on imported water, particularly through metering and elimination of lower rates for larger users wherever possible.

23 • Reservoir 30-B would supply part or all of the water for most of the northern towns. (Lynnfield, Reading, Gloucester, Rockport, Ipswich, Hamilton, Topsfield, North Reading, Wilmington, Middleton, Beverly, Salem, Danvers, Peabody).

24 • Existing surface water supplies should continue to be used in Lynn and North Andover and Andover should negotiate an agreement with Andover for surface water supplies.

25 • Existing ground and surface water supplies should continue to be used in Manchester and Newburyport.

26 • Ground water should continue to be used in Wenham.

27 • Additional ground water resources should be developed in Essex, Rowley, Georgetown, Boxford, Groveland, the western end of Newbury, and transfer of water from Newburyport to eastern Newbury should be continued.

28 • MDC would continue to supply seven towns (Nahant, Revere, Saugus, Wakefield, Winthrop, Marblehead and Swampscott).

29 • Two advanced wastewater treatment facilities should be considered with discharge to the Ipswich. Sewer systems would be needed in North Reading, Lynnfield, and most of Middleton and tie into the plant to be located in North Reading or Middleton. The second facility to serve systems constructed in Hamilton and Topsfield could be located in either town where a feasible location exists for discharge to the Ipswich.

30 • The requirements of the Federal Water Pollution Control Act Amendments of 1972 be met in all cases throughout the basin.

31 • Existing landfills causing groundwater or surface water quality problems should be abandoned as soon as feasible and corrective measures are taken to prevent residual wastes from polluting water resources. Voluntary membership in the Massachusetts Solid Waste Recovery Program should be considered for all towns with improperly operating landfills on an individual basis.

32 • Existing regulations for the siting, location, construction and operation of subsurface disposal systems be investigated for the purpose of improving them to ensure the use of such systems will truly protect ground and surface waters.

33 • "Except as otherwise provided herein, no new discharge of wastewater will be permitted into any stream, river or tributary upstream of the most upstream discharge of wastewater from a municipal waste treatment facility or municipal sewer discharging wastes requiring appropriate treatment as determined by the Division. Any person having an existing wastewater discharge shall be required to cease said discharge and connect to a municipal sewer unless it is shown by said person that such connection is not available or feasible. Existing discharges not connected to a municipal sewer will be provided with the highest and best practical means of waste treatment to maintain high water quality. New discharges from a municipal waste treatment facility into such waters will be permitted provided that such discharge is in accordance with a plan developed under the provisions of Section 27(10) of Chapter 21 of the General Laws (Massachusetts Clean Waters Act) which has been the subject of a Public Hearing and approved by the Division. The discharge of industrial liquid coolant wastes in conjunction with the public and private supply of heat or electrical power may be allowed provided that a permit has been issued by the Division and that such discharge is in conformance with the terms and conditions of the permit and in conformance with the water quality standards of the receiving waters.

34 • Except as otherwise provided herein, no new discharge of wastewater will be permitted in Class SA or SB waters. Any person having an existing discharge of wastewater into Class SA or SB waters will be required to cease said discharge and to connect to a municipal sewer unless it is shown by said person that such connection is not available or feasible. Existing discharges not connected to a municipal sewer will be provided with the highest and best practical means of waste treatment to maintain high water quality. New discharges from a waste treatment facility into such waters will be permitted provided that such discharge is in accordance with a plan developed under the provisions of Section 27(10) of Chapter 21 of the General Laws (Massachusetts Clean Waters Act) which has been the subject of a Public Hearing and approved by the Division. The discharge of industrial liquid coolant wastes in conjunction with the public and private supply of heat or electrical power may be allowed provided that a permit has been issued by the Division and that such discharge is in conformance with the terms and conditions of the permit and in conformance with the Water Quality Standards of the receiving waters."

35 • All coastal treatment facilities be equipped with pump-out facilities or be connected to pump-out facilities at marinas to serve those vessels equipped with holding tanks.

36 • The U. S. Fish and Wildlife Service has proposed that the Department of Natural Resources acquire 15,000 additional acres of wildlife habitat by expanding existing state park boundaries and eliminating in-holdings.

37 • The U. S. Forest Service has proposed that the Department of Natural Resources and State Access Board work out an arrangement with private landowners whereby they would manage about 1,000 acres of wildlife habitat in Danvers, Groveland, Ipswich, Middleton, Newbury, Rowley, and Topsfield in exchange for public hunting access.

38 • The U. S. Fish and Wildlife Service and the Massachusetts Division of Fish and Game should maintain open to hunting 5,235 acres of wildlife habitat.

39 • The Department of Natural Resources should provide technical and legal assistance to local conservation commissions in order to improve procedures for wetlands protection as described in existing legislation.

40 • The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider obtaining public access rights-of-way and/or acquiring significant wetlands which are most important for wetlands wildlife production for hunting in these towns allowing hunting:
Hamilton, Topsfield, Wenham, Groveland, Georgetown, Boxford, West Newbury, Newbury, Newburyport, North Andover, Ipswich, Rowley, Rockport, Wilmington, Woburn, Peabody, Danvers, Middleton, Essex, Manchester, North Reading, and Wakefield.

41 • The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider acquiring significant wetlands which are most important for wetlands wildlife production in these towns which do not allow hunting:
Lynnfield and North Reading.

42 • The U. S. Fish and Wildlife Service has recommended that: The State Access Board acquire access rights to Four Mile Pond, Boxford; Gravelly Pond, Hamilton; Middleton Pond, Middleton; Spring Pond, Peabody; Swan Pond, North Reading; Wenham Lake, Beverly-Wenham; thereby assuring 726 acres of ponds for freshwater fishing.

43 • The Massachusetts Legislature should amend the Great Pond Act of 1869 (Chapter 384) to permit public access to ponds 10 acres and greater for fishing.

44 • The Massachusetts Division of Fish and Game should provide public rights-of-way to 15 streams of good and best fisheries potential. Assuming adequate public access and fisheries management, these streams could provide over 19,000 man-days of fishing per year.

45 • The Massachusetts State Access Board through acquisition of public rights-of-way and the Massachusetts Department of Public Works through the Great Ponds Act should be sure that public access for fishing is guaranteed to at least 41 ponds of ten acres or larger of good and best fisheries potential, thereby supplying over 75,000 man-days of fishing per year.

46 • The Massachusetts Division of Fish and Game should expand fishing license program to anglers younger than 12 and use revenues to manage freshwater fisheries.

47 • The Division of Fish and Game, State Public Access Board, and towns should acquire rights-of-way to 15,000 acres of ledge for picnicking, camping, and extensive recreation. (See "Resource Base Configuration Map)

48 • The Division of Forest and Park Sites should expand the Harold Parker State Forest by acquiring 2,510 acres in Middleton, North Andover, and possibly along the Ipswich River, in addition to the A. B. M. site already being acquired.

49 • Private interests and towns should protect 128 unique cultural and at least 50,775 acres of unique natural sites through direct purchase easements, historic zoning and some local zoning. Those located in towns under high developmental pressures should be acted upon first.

50 • Division of Forest and Parks should acquire 1,700 acres, including Spring Pond, to create a Salem Highlands Reservation.

51 • The town of Lynn should acquire 575 acres to expand the boundaries of Lynn Woods.

52 • MDC should expand Breakhart Reservation in Wakefield and Saugus.

53 • The Department of Public Health should modify existing policy and permit non-contact recreation on public watershed lands, including Dykes Lake and Haskal Pond in Gloucester, and look into the feasibility of swimming and boating.

54 • The Department of Natural Resources should establish a state scenic rivers system and designate the Ipswich River as an initial component.

55 • Curran's Beach in Swampscott and West Beach in Beverly should be acquired and opened by the towns for public use by local residents.

56 • The MDC should widen Winthrop, Revere and Lynn beaches to the maximum extent feasible given local conditions. This is expected to cost approximately $

57 • The MTA should improve rapid transit facilities and bus service to Revere, Winthrop and Lynn beaches and initiate express bus service from metropolitan Boston to Wingarsheek, Crane's and Plum Island beaches at a combined cost of approximately $

58 • Present local management of shellfish resources be strengthened with increased technical assistance and coordinated management practices to be partially paid for by requiring recreational shellfish licensing.

59 • Aquaculture: Although the existing shellfish resources are sufficient to meet recreational demands through 1990, it is necessary to import shellfish to service restaurants for the commercial trade. With its extensive estuarine habitats, there should be greater emphasis placed upon commercial shellfish production.

60 • The American oyster (which has been cultured in varying degrees in this country for over a hundred years), the hard clam (quahog), bay scallop, silver (Coho) salmon and American lobster.

61 • Consistent with SENE resource maps (see section on "Areas of Particular Concern") showing high quality estuaries, The State Division of Marine Fisheries should consider Plum Island Sound and Essex Bay for potential intensive aquacultural leasing sites.

62 • The General Court should develop additional aquacultural legislation which exempts growers from protective state and federal laws which apply to the exploitation of natural crops.

63 • The State Division of Marine Fisheries should be funded to take a more active role in providing technical assistance to communities in locating suitable sites and evaluating private corporations for the necessary technical and administrative qualifications prior to granting aquacultural licenses.

64 • The State Department of Public Health should consider revamping its regulations concerning shellfish beds to allow potential use of treated effluent for shellfish propagation.

65 • Existing recreation and commercial channels be maintained by the Corps of Engineers in 14 harbors (Winthrop Harbor, Saugus River, Lynn Harbor, Beverly Harbor, Danvers River, Porter River, Salem Harbor, Newburyport Harbor, Ipswich River, Essex River, Annisquam River, Rockport, Gloucester and Manchester Harbors). These will cost $

66 • About a dozen existing private marina facilities should be expanded by private funding at Newburyport, Winthrop, Lynn, Gloucester, Manchester, Marblehead, Salem, Beverly Harbors and Pines, Saugus, Danvers, Porter, Bass, Ipswich, Essex, and Annisquam Rivers, to accommodate a total of 425 recreational boats and another large private marina should be built in Salem.

67 • Establish state and local saltwater boating advisory committee to coordinate orderly growth of boating use in Newburyport, Ipswich, Gloucester, and Manchester.

68 • Continue maximum use of non-structural methods to prevent flooding such as protection of natural valley storage areas, flood insurance, and flood plain zoning. Particular attention should be given to areas susceptible to high development pressure.

69 • The Corps of Engineers should construct a diversion channel from the Burlington Avenue bridge to the Wildwood Street bridge to divert excessive flood flows around the industrial and recreational area that was subject to flooding in March 1968. (Cost of construction would be approximately $100,000; the flood stage would be reduced nearly 2 feet for a recurrence of the flood of March 1968.)

70 • Towns or private owners should remove or flood proof existing flood prone structures where structural solutions prove more expensive than the value of the property protected.

71 • The Corps of Engineers in cooperation with the Massachusetts Department of Natural Resources should study natural valley storage areas and set up a program for acquiring those areas most significant for flood damage protection. Particular emphasis should be given to protection of wetlands classified as unique natural areas and those located in areas subject to high and medium development pressure.

72 • Towns should continue and encourage transfer of wetlands titles to state or to conservation commissions with income tax deductions as reimbursement.

73 • The Department of Natural Resources should continue to enforce existing wetlands legislation.

74 • The Department of Natural Resources should provide technical and legal assistance to local conservation commissions in order to improve procedures for wetlands protection as described in existing legislation.

75 • Towns should protect coastline through zoning and, where economically feasible, through limited purchase.

76 • The state in its coastal zone management program should preclude further development on marshes and barrier beaches (SENE category "A"), thereby assuring more open space for future recreation uses and landscape quality; and provide a guide for future planning and management which would encourage development on areas less susceptible to adverse environmental impacts.

77 • The Corps of Engineers together with the Commonwealth should construct only where economically feasible, seawalls, bulkheads, and revetments in urban, coastal suburban, and coastal towns, and particularly for beach restoration and protection. This action will also serve to protect loss of land, and loss of tax revenues. In other instances, prohibit redevelopment following storm destruction, such as in the Plum Island Beach area or on the dunes behind Wingaersheek Beach.

78 • The Corps should also construct groins and jettys only where economically feasible, and nourish and stabilize critical coastal erosion areas, particularly beaches. Dune stabilization with beach grass, at such areas as Plum Island Beach or Castle Neck, would prevent loss of sand into estuaries and enhance nearby shellfish beds.

79 • The Corps of Engineers and Massachusetts Department of Public Works should consider allocating foreshore protection monies to the purchase of shorefront properties for recreation in coastal high hazard storm inundation areas in lieu of continued expenditures for seawalls, which in some cases are more expensive than the properties protected.

80 • The Massachusetts Division of Mineral Resources should, as a priority activity, identify and map potential sand and gravel deposits in the planning area.

81 • The appropriate town zoning boards should be encouraged by the Massachusetts Division of Mineral Resources in cooperation with the U.S. Bureau of Mines to protect identified mineral resources sites. The Division should establish state standards for mineral extraction operations and require, by means of a permit, mine operators to make provisions for land reclamation after extraction. Also, to encourage the relaxation of restrictive local zoning for mineral activity, the Division should develop a public education program and technical assistance to the localities to convince the public as to the ways in which mining can be conducted in a socially and environmentally acceptable manner. The local planning boards should develop local regulations in conformance with state standards and plan the redevelopment of mineral extraction sites.

82 • The utility industry should reconsider an 800 MW fossil baseload plant at the existing Lynnway site by 1985.

83 • The industry, in close coordination with the Massachusetts Coastal Resources Management Program, should investigate suitable sites for an 800 MW nuclear plant on the North Shore as an alternative to planned Cape Cod or South Shore sites.

84 • The legislation establishing the Massachusetts Electrical Facilities Siting Council should be amended to empower the Council to establish standards and criteria for power plant siting and to commission such studies as are necessary to identify suitable sites to meet future needs.

85 • Any investigation of potential oil terminal sites should be SENE-wide or New England regionwide in scope, not limited to the North Shore of Massachusetts.

86 • The states should use SENE study data to assist in the identification of potential tank farm locations and pipeline rights-of-way; to prepare reactions to environmental assessments and rankings of such site proposals and develop guidelines and procedures for the development of the best sites in order to be able to advise and assist private and/or public developers.

87 • Refineries and storage facilities should be located inland near existing heavy industrial facilities or in areas having suitable permanent installations or utilities capable of being developed to service their needs with minimum environmental or social disruption. Areas within SENE land use categories "A" or "B" should not be considered for sites and "C" areas should be located inland and their related tank farms and pipeline pumping stations should be located away from the coast.

44-827 O - 75 - 16

The Plan

GROWTH, DEVELOPMENT PRESSURE AND LAND USE

Growth

The population of Ipswich-North Shore planning area was 583,425 in 1970, or about 12 percent of the region's population (third largest population of the ten SENE planning area). In terms of absolute population growth the Ipswich-North Shore planning area was second after the Narragansett Bay planning area, with an increase of 10.6 percent or 56,058 between 1960 and 1970.

In 1970, there were 196,161 persons working in the planning area. In absolute size, it was the third largest employment center in the region. The absolute growth in employment during the sixties of 30,758 gave it the second largest increase in terms of numbers among all ten planning areas. As a result nearly one out of every eight new jobs in the region was located in the basin.

The above figure takes on added significance when thought of in terms of land and water requirements for commercial and industrial development. Of those new basin jobs, one out of every three occurred in retail activities, in large part due to the development of major shopping centers in Peabody, Revere and Saugus. Services utilities, personal and business services, medical, private education, architect-engineering, and research and development consulting operations - also accounted for one out of every three new jobs in the basin. Population increases within the basin resulted in a demand for more public services and government employment accounted for nearly one out of five new jobs. Manufacturing employment in contrast declined by 1,798, or 2.7 percent. Nevertheless, the manufacturing sector with 65,572 jobs in 1970 was the single most important economic area in the planning area.

In 1970, nearly 24 percent of the total land area in the Ipswich-North Shore was devoted to urban uses -- housing, industry, schools, commercial, etc. -- compared to the regional average of almost 19 percent. Population and employment growth during the decade resulted in an increase in urban development of 16,654 acres, or 37 percent: from 45,045 acres in 1960 to 61,699 acres in 1970. For every increase of 3.4 persons, one acre of undeveloped land was converted to some form of urban use during the sixties.

The implications for the future of this rate of land consumption are substantial. Under the Economic Plan alternative, population was projected to increase by 199,000 persons or 33 percent between 1970 and 1990; and from 1990 to 2020 by 271,500 persons or 34 percent. If the urban land consumption rate of one acre for every increase in 3.4 persons should continue to 1990 and 2020, an estimated 58,520 acres of land would be converted to urban uses by 1990 under the Economic Plan alternative, and another 79,850 acres of urban land would be needed during the last 30 years of the forecast period. Thus by 2020, the Economic Plan alternative would require a total of 200,069 acres of urban land, or 77 percent of the planning area's total land acreage.

In contrast, SENE has identified only 40,260 acres of the currently undeveloped land as having some carrying capacity for urban development.

This was accomplished by mapping groundwater recharge areas, wetlands, flood plains, soils suitable for septic tanks, wildlife habitat, important natural areas, etc., overlaying the mapped information, and identifying critical environmental areas. Analysis was then made to determine, to the degree which is possible in a study of this scale, the carrying capacity of the land available in the Ipswich-North Shore planning area. Land having a carrying capacity

for urban development is 40,026 acres -- yet, as has been shown above, if current trends continue, 58,520 acres of land will be needed by 1990; 79,850 between 1990 and 2020, for a total of 200,069 acres of 77 percent of the planning area. The remaining approximately 152,000 acres of undeveloped land have been identified as being so fragile or sensitive and therefore of critical environmental concern, that they have little or no ability to absorb urban development and still retain their natural function or unique characteristic. Those areas are in mapped categories A (water bodies, wetlands, critical erosion areas, beaches, etc.) and B (proposed reservoir sites, flood plains, prime agricultural lands, etc.). Plate 1 shows the land areas which have been classified as areas in which development should be avoided.

Much of this area is already restricted to some degree by existing legislation such as the Commonwealth's wetland laws, or is considered hazardous to safety and well-being (HUD flood plain legislation). Specific recommendations for these areas are covered in the section below entitled "Living with the Forces of Nature". Developable lands have also been shown (map Category C) on Plate 1.

The population projections of the Economic Plan alternative clearly indicate that much of the A and B would be destroyed unless there are drastic changes in the way land is consumed for urban purposes.

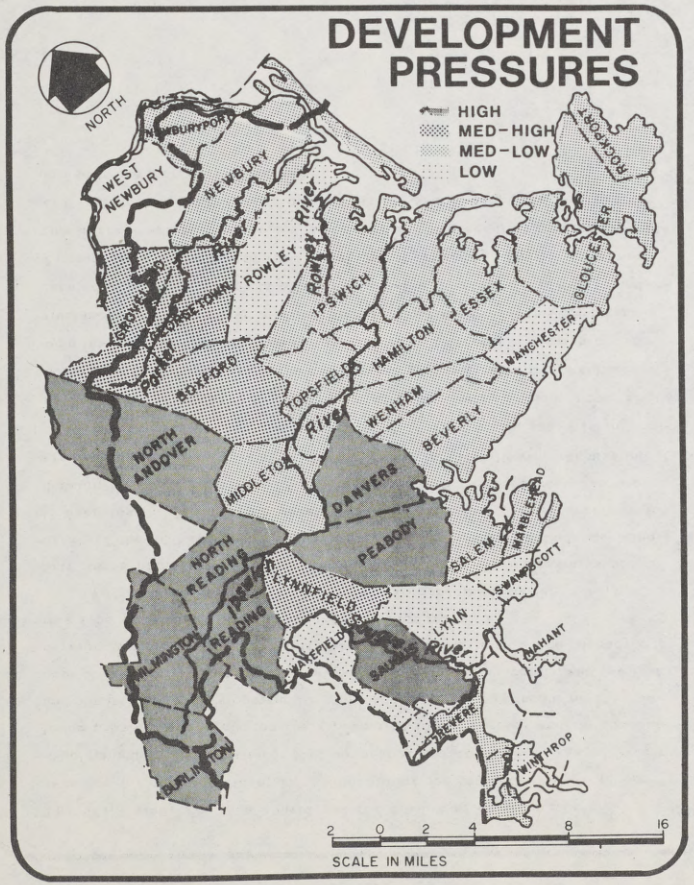
If the 1990 projected population increase of the Economic Plan were to be accommodated on the 40,026 acres having some carrying capacity for development, it would require a density of 4.9 persons per acre, and if the projected increases between 1970 and 2020 were to be accommodated, the density of 11.7 persons per acre would be required. Both densities are substantially higher than the 3.4 persons per acre experienced within the planning area between 1960 and 1970. In actuality, the density would be even higher than that described, because not all of the 40,026 acres has a uniform development capacity. Some 15,660 acres, or 38.9 percent of this land, is predominately ledge - either exposed or within three feet of the surface - and offers little development potential. Another 10,150 acres, or 25 percent, is underlaid by aquifer and are important water supply resources. These are described below. Only 13,660 acres can be developed without taking into account any sewer service factors.

For the Ipswich-North Shore to continue to have any significant population growth, trade-offs will be required among higher density, the protection of land resources, and the location of growth.

Furthermore, no matter what choices or combination of choices are made, growth will require the introduction of a substantial amount of additional sewering, since at least 12.4 percent of the developable land has soils with severe septic tank limitations.

Development Pressure

In order to evaluate the adequacy of existing water quality management programs to accommodate additional population, a method had to be devised which would enable a comparison of "projected population to be served" to amounts and densities of new development in the basin. The amounts and densities of new development have been shown through empirical studies in SENE and elsewhere to be related to (1) the relative accessibility of an area to employment and other population and (2) the availability of easily developable land. A composite of these factors have resulted in the following determination of Development Pressure.



IPSWICH-NORTH SHORE PLANNING AREA COMMUNITIES
BY DEVELOPMENT PRESSURE

High	Medium-High	Medium-Low	Low
Danvers	Boxford	Beverly	Lynn
No. Andover	Georgetown	Essex	Manchester
No. Reading	Groveland	Gloucester	Nahant
Peabody	Lynnfield	Hamilton	Rowely
Saugus	Reading	Ipswich	Swampscott
Wilmington		Marblehead	Wakefield
		Middleton	Winthrop
		Newbury	
		Newburyport	
		Revere	
		Rockport	
		Salem	
		Topsfield	
		Wenham	

NOTE: Communities are grouped into levels of development pressure both relative to each other within the planning area and relative to other communities in the study region.

The SENE study has also considered the amount of existing municipal services (or infrastructure) as a determining factor in the nature of new development. The density of the residential area of a town was considered to be a useful surrogate for the amounts of infrastructure and the amounts and kinds of new development it would accept. This is based on the concept that a town is less likely to accept high density development, of that development which will need infrastructure, than a town which already has this type of land use and can add to existing services.

For each of the municipality types (as described above) in each of four zones of accessibility the planning group determined "permissable uses" of the "C" category resources in order to maximize their usefulness to each town. The graphic results of the application of this procedure to develop the maximum level of urbanization which the resources can bear are shown on Plate 1a- and are summarized in the following discussion.

As previously noted, the Ipswich North Shore planning area has an estimated 40,026acres of C-category developable lands. Excluding the 15,580 acres of ledge, 29 percent of the developable land is located in six suburban type towns under high development pressure, 17.5 percent is located in the five suburban towns under medium-high development pressure, 40 percent is located in the fourteen towns with a medium-low development pressure and the remainder is in towns with a low development pressure. The distribution of this acreage among the four zones of development pressure by major groupings of C-categories and the recommended density and development coverage contained in the matrix is as follows:

Type of Development Pressure	Septic Tank Limitation Only	No Septic Tank Limitation	High Yield Ground-water Areas, Singly or in Combination w/other C-categories	Best Upland Wildlife Habitat Areas Only
High				
Acres	2,520	3,345	1,355	none
Permissible Du's/acre	3	3	3-12	
Development Coverage	100%	100%	25 - 40%	
Medium - High				
Acres	1,100	1,710	1,440	70
Permissible Du's/acre	3	1	1 - 3	3
Development Coverage	100%	100%	25 - 40%	25%
Medium - Low				
Acres	805	2,575	6,463	none
Permissible Du's/acre	3	1	1 - 3	
Development Coverage	100%	100%	25 - 40%	
Low				
Acres	400	870	530	none
Permissible Du's/Acre	1	.66	.66 - 1.0	
Development Coverage	100%	100%	25 - 40%	

Application of the recommended permissible density and development coverage from Appendix A (Background and Methodology) plus a factor to allow for roads, schools, local shopping, police and fire stations, and other uses such as manufacturing and power substations resulted in a preliminary estimate of the ultimate carrying capacity in each of the four development pressure zones of:

	Estimated No. of New DU's	Estimated Total Population
High	11,620	34,850
Medium - High	3,450	10,360
Medium - Low	4,960	14,880
Low	830	2,500
Total	20,860	62,590

Thus, in the Ipswich-North Shore planning area, the preliminary estimate of the ultimate increase in population, based on the above analysis, is 62,590 persons. An environmental approach was also attempted to protect landscape quality by concentrating growth with only limited new sewering and maximum use of septic tanks, use of ground water as a supply. This approach resulted in a planning area population increase of only 43,400. As discussed earlier, the economic approach using a trends projection which reflected the high growth of the 1960's and the current fertility rate resulted in a population increase of 271,500 for 2020.

It is clear that even with the modest increases estimated for the preliminary ultimate development plan, additional sewering will be required.

Nearly 26 percent, of 16,140 persons of the preliminary estimated population will require the provision of municipal sewer services. In contrast, the water quality recommendations for the planning area for 1990 which are more fully discussed below are not designed to provide municipal sewer services for any population increase between 1970 and 1990. The recommendations discussed in that section are based upon existing plans of municipalities and regional planning agencies and appear to be underestimated, not only in comparison to the preliminary estimate of ultimate population, but in comparison to the 1990 trend projections of the Economic Plan alternative. It appears that careful reassessment should be made of these plans, of their underlying population projections, and the consumption of the C-category developable lands. This is particularly necessary in light of the fact that one half of the 410,316 persons served by a municipal system in 1970 lived in four municipalities -- Beverly, Lynn, Revere and Salem, nine municipalities had no sewer system, and another municipality -- Wilmington -- had two percent or less of its population tied into a sewer system.

Given all of the factors cited above, the scale of expansion of municipal systems proposed in existing plans implies that:

- Future population growth will tend to occur only on one acre lots in towns having C-category soils unsuitable for septic tank development, including land underlaid by high yield ground-water reservoirs and those areas best suited for upland wildlife habitat which are primarily located in the areas under high and medium-high development pressure.

- Some of the future population growth will occur on that portion of the 15,580 acres of agricultural land having soil suitable for septic tank development.

- Some of the future population growth must occur as very large lot developments at high cost, e.g., 3-acre lots, on C-category soils having severe septic tank limitations in order

to provide an adequate on-site disposal.

- All other C-category lands which have a potential for development would be skipped over with the result that there would be an unnecessary proliferation of small scattered low density subdivisions across the landscape.

- Certain valuable resources and resources of critical environmental concern would be destroyed.

There appear to be no inherent advantages to such a development pattern, and very considerable disadvantages in terms of loss of important and/or desirable natural resources. There would also be increased dependence upon the automobile for transportation which would run counter to state policy to emphasize mass transportation, and further degrade the air quality of the planning area. Also, municipal costs, both capital and operation would increase.

The need for somewhat more intermediate as well as long-term sewering in order to make the most effective use of those land resources capable of development while at the same time preserving more than 60 per cent of the total land area of the basin planning area is an issue of major importance to the citizens which reside there.

Land Use

Because the sewer plans now being developed are likely to be serving the "ultimate" urban areas (Plate 1) and also because the present development climate encourages scattered growth, the Ipswich-North Shore area is threatened by low density development which would consume all developable lands. This would eliminate the important recreation attributes of the area.

A number of important recommendations have been presented in Chapter 2. A few of those recommendations are covered here. Therefore, in order to avoid the consequences of uncontrolled growth described above, it is recommended that:

- Regional Planning Agencies and towns in the Ipswich-North Shore area with the Environmental Protection Agency and the Division of Water Pollution Control should re-evaluate the array of existing sewer plans with the intent of providing flexibility to expand capacity now in anticipation of higher urban densities after 1990.

- Department of Community Affairs and Department of Natural Resources should provide financial and technical assistance to planning area Regional Planning Agencies and the municipalities in order to enable them to undertake the joint preparation of fifty year time-phase sewer development plans and capital programs. These plans should take into account in addition to wastewater facilities, land use controls in order to encourage future concentration of growth in these areas. Each municipality should adopt the plan and capital program and undertake implementation through annual capital budgets, and through necessary amendments to their zoning by-laws. Regional Planning Agencies and the state, through the A-95 review process should set up procedures to give automatic approval to those local and state capital projects which implement the time-phased plans.

The above actions should permit the following recommendations to be carried out:

• The state legislature in concert with towns, regional planning agencies, and state agencies should establish policies to encourage urban development in already developed areas within the Route 128 to permit maximum use of existing water, sewers, and transportation services. Planned unit development and the cluster principle should be encouraged elsewhere to maintain as much as possible critical environmental areas, forests, wetlands and best wildlife habitat areas in order to stem wholesale destruction of the fabric of community life in the Ipswich-North Shore area.

A number of resources have been grouped together in this study as representative of those for which the highest and best uses would be for water supply, fisheries production, limited recreation or scenic/open space lands. In order to protect these highly fragile resources which in some cases would pose a risk to human safety if developed, it is recommended that:

• Towns, conservation commissions, planning boards, and the state Department of Natural Resources should protect and leave undeveloped those areas in SENE map category A (Plate 1). Included are water bodies and beaches. Also included are wetlands (both coastal and inland) and well sites which are currently under regulation (additional recommendations on wetlands are included in the Section "Living with the Forces of Nature"). Protection should be by acquisition, easement, zoning, tax incentives, transfer of development rights, and other tools for controlling land use.

In addition to those resources described above, other resources have been grouped as being slightly more tolerant to specific types and densities of urbanization. With proper management techniques certain areas would be capable of sustaining agriculture, forestry, recreation, or low density residential land uses (with proper safeguards, for example, flood proofing).

It is recommended that:

• Town conservation commissions, planning boards, the state Department of Natural Resources should protect undeveloped areas in SENE map category B (Plate 1). Included are flood plains, proposed reservoir sites, Class I and II agricultural soils, unique natural and cultural sites. Protection should be by methods similar to those described above for category A lands.

Areas which are capable of being developed under various densities and land uses have been mapped and are shown on Plate 1. Guidelines on permissable uses and precautions to be taken when particular areas must be allocated to other uses are covered in Table in Appendix A, Background and Methodology. The guidelines have been designed so that they may be enforced or relaxed as more intimate knowledge of local conditions is brought into being in the land allocation process. It is recommended that:

• Towns carry out detailed studies where they have not already done so in order to channel growth to SENE mapped categories C, F, and G and to a limited extent on available areas in E.

C-Areas Critical resource areas that do not need protection if at low density (R5) or if protected by suitable planning controls or sewers they may be developed at a higher density. Includes land with severe tank limitations, high landscape quality, high yield aquifer, best upland wildlife habitat, steep slopes.

F-Areas Land with soils of moderate septic tank limits.

G-Areas Land with soils of little or no septic tank limits.

E-Areas Existing urbanized lands.

The towns which have been characterized as being subject to the various categories of development pressure have been described above in this section. Recommendations for these towns are as follows:

High Development Pressure Areas

- The town of Wilmington should maintain high quality water in the antidegradation stretches of the Ipswich River by the provision of additional sewer service from the Metropolitan District Commission sewer district and by connection to the North Reading sewer system.

- The 3,345 acres of land suitable for development with septic tanks should be permitted to developed using that technology in order to provide a range of housing opportunities and diversity in the character of development.

- Town conservation commissions and planning boards and the state Department of Natural Resources should maintain in their natural state for recreational use the 818 acres of C-category developable lands which should not be built upon in order to retain groundwater supplies, high quality landscape or high upland wildlife habitat through outright purchase, easements, or zoning or other applicable tools for controlling land use.

- Department of Natural Resources and Metropolitan District Commission should undertake a cooperative acquisition program of the 1715 acres of ledge areas in order to provide additional outdoor recreation areas, particularly in areas close to the metropolitan area such as Saugus and North Reading.

- Department of Natural Resources should give high priority to designating the Ipswich River as a recreation and scenic river in order to protect the shoreline from private development in Peabody and Danvers.

- Department of Community Affairs should provide financial and technical assistance to the six municipalities to review and make adjustments in their industrial and commercial zones of their by-laws in order to assure that the locations and development requirements are compatible with the land and water resources of critical environmental concern (A, B, and C map categories on Plate 1).

Medium Development Pressure Areas

- Department of Natural Resources and the affected municipalities should purchase, obtain easements, or zone all areas of coastal influence in categories A and B in order to protect them from development.

- The state should give further tax relief to lands maintained in active agricultural use, especially those farms operating on prime agricultural land.

- Department of Natural Resources and the municipalities should purchase, obtain easements or zone for recreation purposes the 11,895 acres in ledge and the 4,993 acres of C-category develop able lands which should not be built upon in order to retain groundwater supplies, high quality landscape or high upland wildlife habitat.

Low Development Pressure Areas

- No special actions beyond those undertaken for the basin as a whole are proposed.

PROVIDING CLEAN WATERS AND AN ADEQUATE
SUPPLY OF WATER THROUGH INTERTOWN COOPERATION

Introduction

The critical need for coordinated water resources management decisions among municipalities in the Ipswich-North Shore planning area is illustrated in (1) the intertown competition for ground water as a source of local water supply, (2) the current system of wastewater disposal, (3) the desire to maintain much of the planning area's natural resources for recreational uses, and (4) intertown competition for use of Ipswich river flows.

Water Supply

Water consumption from planning area municipal sources in 1970 was 71 million gallons per average day (mgd). There is an existing safe yield of 79 mgd within the basin with the Metropolitan District Commission supplying an additional 17 mgd. The 1990 design demand is expected to reach 127 mgd.

Ground water is the most economical alternative for local water supply if such resources exist in a town and the town is willing to accept the necessary tradeoffs to land use development required to protect the resources and effects of lower water tables (stream flow reduction and pond level reduction). With low development pressures it appears likely that the towns of Boxford, Groveland, Georgetown, Rowley, Essex and Wenham will have adequate ground water resources to meet 1990 demands. All of the remaining towns except Lynn, Salem, Beverly, Gloucester and North Andover and the established urban towns which are already totally reliant on MDC (or will be shortly totally relying on MDC), will continue to utilize existing ground water sources as an important part of their supply.

Some idea of the increasing conflicts for the use of this resource can be obtained by a discussion of the existing situation between Wilmington and Reading. The ground water supply of the downstream town of Reading depends on Ipswich River streamflow which infiltrates porous basin subsoils. Wilmington, being upstream, taps ground water which otherwise would provide streamflow of the Ipswich River downstream to Reading. Withdrawal from Wilmington's wells can severely reduce streamflow available to infiltrate Reading's ground water reservoir during summer and early fall low flow periods. Increased withdrawal by Wilmington and Reading may lead to competition for ground water in the future.

A critical water shortage could develop during the next few years if the towns of Wilmington and Reading are lulled by an extended period of average or above average precipitation and ground water recharge. If a drought struck the area when its water resources were fully developed, demands could not be met. Expensive emergency supplies might have to be imported from another source such as the MDC, or water use would have to be cut back. The most critical shortages would occur in the late summer or early fall when ground water storage is at its seasonal low and water demand is at its seasonal high. During a drought Wilmington has an advantage over Reading because its wells are upstream from Reading's ground-water supply. Wilmington can withdraw water and therefore reduce streamflow in the Ipswich River upon which Reading's ground-water supply is dependent.

Ground water quality problems also exist. A private ground water supply in Goldthwaite Brook Valley supplies an important Peabody industry. This ground water supply has been developed to capacity, and deterioration in water quality in this aquifer may have significant economic impact on the industry, and therefore on Peabody.

The Ipswich-North Shore planning area is also one of the few areas in the study region with topographic conditions and available water to permit surface water reservoir construction. Although small regional surface water systems are no more economical than connections to the MDC they are

recommended in order to minimize out-of-basin sources and reliance on the expansion of the MDC.

A number of alternative water supply configurations were considered to present a full range of options. Among those evaluated were use of in-basin resources only with augmentation of existing supplies exclusively from ground water sources. Under this alternative, significant reductions in the growth of per capita consumption would be necessary. Other alternatives considered were construction of a number of reservoirs as well as ground water use. Significant expansion of the Metropolitan District Commission (MDC) service area was also considered. The option of constructing one reservoir was favored by basin residents. Though it would require establishment of a regional water authority, it would require less land area than the option of several small reservoirs, and is flexible in that its supply could be augmented from out-of-basin sources as the need occurred after 1990.

Water Quality

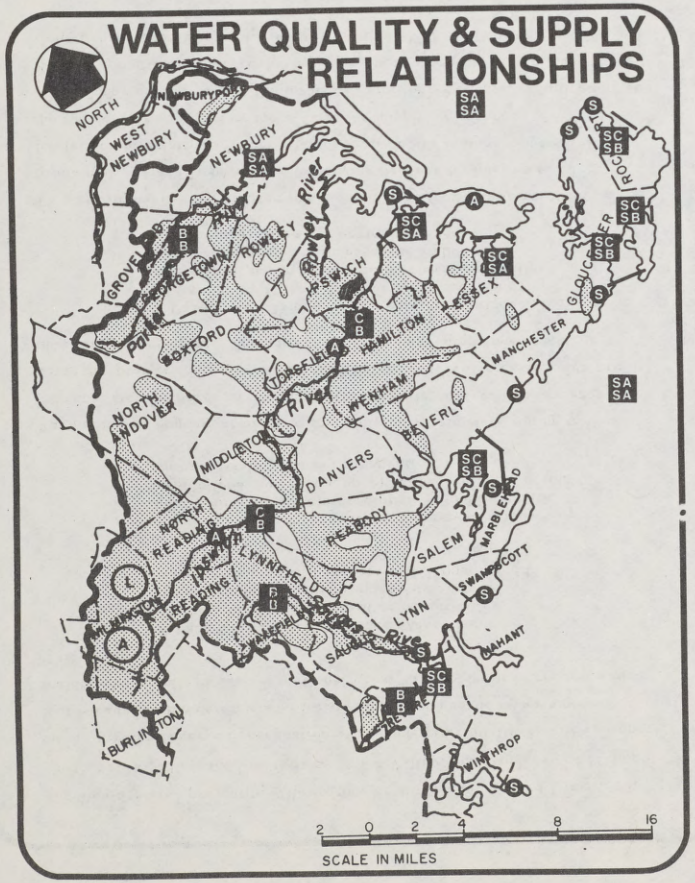
Just as the surface and ground water aspects of water supply in the planning area are intimately interrelated, so too are the problems and opportunities of water quality related to water supply. Most of the 143 miles of coastline border waters are of generally high quality. Exceptions include the Saugus and Pines Rivers estuary, Lynn, Salem-Beverly, Gloucester and Rockport Harbors. Currently planned secondary municipal treatment facilities should achieve water quality standards for all these areas with the exception of the Saugus-Pines estuary. Here, landfill leachate and urban runoff have resulted in closing shellfish beds and precluding recreational opportunities.

Of the approximately 56 miles of mainstem streams in the basin, only the Ipswich River is currently below state standards for certain recreational uses. The Parker, Rowley, Saugus, and Pines Rivers are all generally of high quality. With low development pressures and proper management, these waters can continue high in quality. Low stream flows coupled with poorly sited landfills and malfunctioning individual subsurface disposal systems have caused the water quality problems on the Ipswich River. Unlike the previously mentioned streams, more costly abatement measures, as opposed to preservation techniques, are necessary to restore the Ipswich to a valuable recreational resource.

Water Quality and Quantity Relationships

Currently, four Ipswich River Basin towns withdraw ground water from aquifers in the basin and discharge it as wastewater through out-of-basin treatment facilities. Reading discharges to the MDC Deer Island Facility, Peabody and Danvers to the South Essex Sewer District plant, and Ipswich to its own facility discharging to the Ipswich River estuary. Therefore streamflow in the Ipswich River below each diversion is depleted by an amount approximately equal to the ground water withdrawn, especially during low flow periods (usually August through October) when streamflow is almost entirely dependent on ground water.

Additionally, other towns with wells adjacent to the river which return water to the basin by septic systems will lower streamflow during this time due to increased summer water withdrawal and the lag between pumping and recharge. All of this will result in adverse impacts on a stream's natural regenerative ability, on aquatic and wetland ecology, recreational boating, bathing, water supply, and aesthetic values.



Existing Water Quality Classification
Proposed Water Quality Classification (1977)

Water Quality Limited Stream Stretches (high degree of treatment)
Antidegradation Stretches (no discharge)

Advanced Wastewater Treatment Facility

Secondary Wastewater Treatment Facility

Proposed Reservoir 30-B

Important ground water reservoirs

Inter-town Cooperation and Water Resources Management

The examples selected for inclusion illustrate the need for an integrated water resources decision mechanism in this planning area. The SENE study supports the modeling approaches developed between the U.S. Geological Survey and the Massachusetts Division of Water Resources. The relationship between ground water withdrawal and diversion of both surface and ground water not only for water supply purposes but also through transfer via sewers to coastal waters can have profound effects on water availability for a number of uses. Larger ground water reservoirs are located in Topsfield and Rowley and in Hamilton and Wenham, in the vicinity of Wenham Swamp. Significant

supplies are also present in Wilmington, Reading, Peabody and Danvers, in North Brook Valley and Goldthwaite Brook Valley, and Danvers and Middleton on the Ipswich River. Preservation of ground-water quality is vitally important because of the dependence of many towns for ground water and to maintain streamflows for recreational uses. Therefore it is recommended that:

- Land use in these recharge areas should be strictly regulated. Facilities or activities hazardous to ground-water quality such as highway deicing salt storage and dumps should be restricted.

- Enforce more vigorously existing requirements concerning flood plain development, public health regulations concerning water table levels and soils characteristics for development.

Furthermore, opportunities exist for applying appropriate zoning to these ground-water recharge areas where ground water reservoirs are presently being used for public water supplies or where reservoirs exist which are potentially productive. Therefore, it has been recommended that:

- Permissible land uses be restricted to those of R5 density (1 dwelling unit every 3 acres or more) until it can be proven that higher densities could be tolerated without taking additional precautions such as sewering the area.

This recommendation has been made despite the fact that some of these towns may eventually be served to varying degrees by Reservoir 30-B. Protection of existing sources will maintain future options and could lower the future cost incurred by the town in the supply of water.

Opportunity exists in the towns of Hamilton, Wenham, Wilmington, and Reading for utilization of recharge basins in recharge areas adjacent to well fields. Sand and gravel pits, because of their high infiltration capacity, can be modified so as to replenish ground-water supplies. Storm runoff can be diverted to these recharge basins by drains from areas where the amount of permeable land surface has been significantly reduced by construction and paving, thereby increasing ground water quantity and protecting surface water quality. For these reasons, and in order to encourage a policy of in-basin self-sufficiency by maintaining existing water resources within the basin, it has been recommended that:

- Development of recharge basins should be considered in a number of areas in this planning area. (Towns are shown on town group plan.)

There does not currently exist a state law which specifically protects or manages ground-water recharge areas. The Department of Public Health does have the authority to determine quality of water supply for public use and there is a requirement that the utility own and restrict incompatible uses in a 400 ft. diameter area around wells.

The SENE study therefore recommends the following institutional structure to begin carrying out these above mentioned actions within the next five years.

- A regional water authority with responsibility to develop and plan for water supply and for water quality functions should be established in this planning area.

Implementation of this recommendation might be accomplished in a number of ways. Perhaps the most effective method would be to expand the authority and functions of the existing Ipswich River Watershed Association to enable it to plan, manage, and develop water supply and quality. Alternatively, a new district could be created to perform these functions, by agreement between the towns involved, and upon petition and approval of the Massachusetts General Court and the Department of Public Health. A third method, but one

which is likely to meet political opposition and create resentment, might be to locate this authority in the state Water Resources Commission in the Divisions of Water Resources and Water Pollution Control. A division of planning would have to be added to the Commission and a stronger liaison between the Commission and the Metropolitan Area Planning Council would be advisable. This too, would involve special acts of the Legislature investing such authority in the Commission and strengthening the RPA's. Any of the above institutional arrangements could be coordinated with the water resources planning efforts at the substate level which has been initiated by the Federal Water Pollution Control Act Amendments. The last arrangement does seem however to offer the path of least red tape because of the association with the RPA.

In addition to the obvious water supply benefits of these proposals, water quality preservation will be an important benefit as well. Low density development, land use restrictions, and runoff controls will greatly aid in the preservation of the high quality waters of the basin and tend to prevent further degradation of the remaining waters until abatement measures can be implemented.

Immediate and Mid-Term Actions

The actions recommended for the Ipswich-North Shore planning area stress the conservation and management of in-basin water resources and basin self-sufficiency to the degree possible. Also emphasized in the plan is the attainment of adequate surface water quality and streamflow in the Ipswich River for year-round recreational use.

It is therefore recommended that:

- All towns institute water conservation practices as a precaution against increasing future dependence on imported water, particularly through metering and elimination of lower rates for larger users wherever possible.

Although water conservation practices alone were found to be inadequate to defray the need for development of additional water supplies, minimizing economic and environmental costs from any additional supply is still the major justification for the planning area to become more water conscious.

The following is the recommended program for supplying water to the basin until 1990. The Water Resources Commission should purchase the wetlands areas necessary to construct the Reservoir 30-B and the state legislature should pass on the proposal.

- Reservoir 30-B would supply part or all of the water for most of the northern towns. (Lynnfield, Reading, Gloucester, Rockport, Ipswich, Hamilton, Topsfield, North Reading, Wilmington, Middleton, Beverly, Salem, Danvers, Peabody).

- Existing surface water supplies should continue to be used in Lynn and North Andover and Andover should negotiate an agreement with Andover for surface water supplies.

- Existing ground and surface water supplies should continue to be used in Manchester and Newburyport.

- Ground water should continue to be used in Wenham.

- Additional ground water resources should be developed in Essex, Rowley, Georgetown, Boxford, Groveland, the western end of Newbury, and transfer of water from Newburyport to eastern Newbury should be continued.

- MDC would continue to supply seven towns (Nahant, Revere, Saugus, Wakefield, Winthrop, Marblehead and Swampscott).

Table 1 is a summary of the design demands and proposed additional sources for the recommended plan for each of the towns in the basin.

Table 1
Summary of 1990 Water Supply Proposal

Existing System

		Safe Yield mgd	1990 Average Demand mgd	1990[k] Design Demand mgd	Proposed Additional Sources of Supply
Beverly-Salem	Wenham Lake & Longham Res.	3.1	13.72	same	Reservoir 30-B
	Ipswich River Diversion -- Legislated	8.3 11.4			
Boxford	Private Supplies	-	0.16	0.41	Ground Water
Danvers-Middleton	Middleton Pond	1.14	5.48	same	Reservoir 30-B
	Swan Pond	0.11			
	Emerson Brook	0.71			
	Wells	2.30			
		4.26			
Essex	Wells	1.14	0.51	1.18	Ground Water
Georgetown	Wells	1.4	0.84	1.84	Ground Water
Gloucester	Reservoirs & Quarries	3.51			
		.48			
		3.99	4.99	same	Reservoir 30-B
Groveland	Wells	1.00	0.86	1.89	Ground Water
Hamilton	Wells	1.68	1.40	2.93	Reservoir 30-B
Ipswich	Dow Brook Reservoir	0.40	1.87	same	Reservoir 30-B
	Bull Brook Reservoir				
	Wells	1.29			
		1.69			
Lynn	Hawkes Pond				
	Walden Pond				
	Birch Pond				
	Breeds Pond				
	(Diversion from Ipswich River)	.0	17.10	same	None
Lynnfield	MDC	a)	1.35	same	Reservoir 30-B
	Wells	1.18			
Manchester	Gravelly Pond	1.43	1.17	same	None
	Wells	.86			
		2.29			
Marblehead	MDC	b)	4.23	same	MDC
Nahant	MDC	c)	1.25	same	MDC
Newbury	Georgetown &	0.09	0.61	1.39	Ground Water &
	Newburyport	0.10			Newburyport
		0.19			
Newburyport	Wells	1.4	3.16	same	None
	Artichoke Reservoir	1.6			
	Spring-fed pond	0.2			
		3.2			
N. Andover	Lake Chochichewick	3.0	4.77	same	Merrimack River through Andover system
No. Reading	Wells	1.25	2.04	4.10	Reservoir 30-B
Peabody	Spring Pond	0.26			
	Suntaug Lake	1.35			
	Winona Pond	3.00	11.15	same	Reservoir 30-B
	MDC-Legislated	1.0			
	Wells	1.50			
		7.11			

Table 1 (cont.)
Summary of 1990 Water Supply Proposal

Existing System

		Safe Yield mgd	1990 Average Demand mgd	1990[k] Design Demand mgd	Proposed Additional Sources of Supply
Reading	Wells	5.90	4.17	7.76	Reservoir 30-B
Revere	MDC	(d)	4.71	same	MDC
Rockport	Cape Pond	0.25			
	Quarry Reservoir	0.20	1.49	same	Reservoir 30-B
	Wells	0.18			
		0.63			
Rowley	Wells	0.85	0.35	0.84	Ground Water
Saugus	MDC	(e)	4.77	same	MDC
Swampscott	MDC	(f)	2.37	same	MDC
Topefield	Wells	1.53	1.35	2.84	Reservoir 30-B
Wakefield	Well	0.37	4.70	same	MDC
	Crystal Lake	0.66			
	MDC	(g)			
Wenham	Wells	1.72	0.61	1.39	None Required
Wilmington	Wells	7.10	5.28	9.56	Reservoir 30-B
Winthrop	MDC	(h)	2.16	same	MDC

(a) MDC supplied about 0.3 mgd in 1970.

(b) MDC provided 2.23 mgd in 1970.

(c) MDC provided 0.56 mgd in 1970.

(d) MDC provided 3.95 mgd in 1970.

(e) MDC provided 2.97 mgd in 1970.

(f) MDC provided 1.63 mgd in 1970.

(g) 1970 Demand was 3.30 mgd. Assume MDC supplied 2.27 mgd.

(h) MDC provided 1.81 mgd in 1970.

(j) Includes 0.5 mgd for West Newbury

(k) Systems depending primarily on ground water sources must be designed to supply maximum demands as discussed in the "Methodology" section. Design demand is calculated using Figure 1.

As mentioned above, a single large regional reservoir (Reservoir 30-B) will be capable of supplying water at roughly the same cost to consumers as expansion of the MDC. Since the existing resources are inadequate to meet long-range water needs, this solution was chosen because it is more flexible to accept out-of-basin flows after 1990 from the Merrimack River if they are needed. MDC is unlikely to extend services to any new towns in the North Shore in the near future.

In order to avoid a perpetuation of the previously explained out-of-basin diversions from the Ipswich River basin and to prevent further water quality deterioration due to malfunctioning individual subsurface disposal systems and provide high quality waters suitable for all recreational uses, the following program is recommended:

- Two advanced wastewater treatment facilities should be considered with discharge to the Ipswich. Sewer systems would be needed in North Reading, Lynnfield, and most of Middleton and tie into the plant to be located in North Reading or Middleton. The second facility to serve systems constructed in Hamilton and Topsfield could be located in either town where a feasible location exists for discharge to the Ipswich.

The projects listed in this program will be thoroughly investigated as part of the Massachusetts Division of Water Pollution Control's responsibilities to develop water quality management plans as required in the Federal Water Pollution Control Act Amendments of 1972. At this time, since such plans for this basin have not been completed, these projects appear to be the most responsive to appropriate water quality management.

Workshop participants strongly favored this treatment plant configuration even though this solution requires somewhat larger sums for construction than other alternatives. It does, however, assure a wider range of recreational and esthetic benefits, especially during seasonal low flow periods. It must be noted that current Massachusetts Department of Public Health policy prohibits wastewater discharges to any surface water supply. Safety mechanisms to prevent the discharge of untreated wastes in case of plant breakdown are obviously necessary as well as possible changes in policy to allow the treated discharges in the first place.

It is recommended that:

- The requirements of the Federal Water Pollution Control Act Amendments of 1972 be met in all cases throughout the basin.

Many of the towns in the basin now have projects under construction or in the planning phase which are designed to meet those requirements.

It is recommended that:

- Existing landfills causing ground-water or surface water quality problems be abandoned as soon as feasible and corrective measures taken to prevent residual wastes from polluting water resources. Voluntary membership in the Massachusetts Solid Waste Recovery Program should be considered for all towns with improperly operating landfills on an individual basis.

In addition, all new solid waste disposal sites should be rigidly enforced as sanitary landfill regulations stipulate. For landfills which cannot be abandoned, collection and treatment of leachate may be necessary.

Since much of this basin's waters are of high quality and since malfunctioning individual subsurface disposal systems pose the greatest water quality threat, it is recommended that:

- Existing regulations for the siting, location, construction and operation of subsurface disposal systems be investigated for the purpose of improving them to ensure the use of such systems will truly protect ground and surface waters.

Also in keeping with this theme of preservation, the SENE study endorses the anti-degradation policy of the Massachusetts Division of Water Pollution Control:

> • "Except as otherwise provided herein, no new discharge of wastewater will be permitted into any stream, river or tributary upstream of the most upstream discharge of wastewater from a municipal waste treatment facility or municipal sewer discharging wastes requiring appropriate treatment as determined by the Division. Any person having an existing wastewater discharge shall be required to cease said discharge and connect to a municipal sewer unless it is shown by said person that such connection is not available or feasible. Existing discharges not connected to a municipal sewer will be provided with the highest and best practical means of waste treatment to maintain high water quality. New discharges from a municipal waste treatment facility into such waters will be permitted provided that such discharge is in accordance with a plan developed under the provisions of Section 27(10) of Chapter 21 of the General Laws (Massachusetts Clean Waters Act) which has been the subject of a Public Hearing and approved by the Division. The discharge of industrial liquid coolant wastes in conjunction with the public and private supply of heat or electrical power may be allowed provided that a permit has been issued by the Division and that such discharge is in conformance with the terms and conditions of the permit and in conformance with the water quality standards of the receiving waters.
>
> • Except as otherwise provided herein, no new discharge of wastewater will be permitted in Class SA or SB waters. Any person having an existing discharge of wastewater into Class SA or SB waters will be required to cease said discharge and to connect to a municipal sewer unless it is shown by said person that such connection is not available or feasible. Existing discharges not connected to a municipal sewer will be provided with the highest and best practical means of waste treatment to maintain high water quality. New discharges from a waste treatment facility into such waters will be permitted provided that such discharge is in accordance with a plan developed under the provisions of Section 27(10) of Chapter 21 of the General Laws (Massachusetts Clean Waters Act) which has been the subject of a Public Hearing and approved by the Division. The discharge of industrial liquid coolant wastes in conjunction with the public and private supply of heat or electrical power may be allowed provided that a permit has been issued by the Division and that such discharge is in conformance with the terms and conditions of the permit and in conformance with the Water Quality Standards of the receiving waters."

The stream stretches affected by these policies are shown in the accompanying map. The policies seek to preserve water quality rather than to resort to expensive after-the-fact restoration techniques.

Due to the extensive recreational use of the coastal waters of this basin, it is recommended that:

> • All coastal treatment facilities be equipped with pump-out facilities or be connected to pump-out facilities at marinas to serve those vessels equipped with holding tanks.

44-827 O - 75 - 17

MANAGING YOUR OPEN SPACE ASSETS:
PROVIDING FOR TOMMORROW'S RECREATION LAND THROUGH PROTECTION AND ACQUISITION TODAY

There seems to be a widely held belief that the Ipswich-North Shore planning area will provide the recreational elixir for the ailing Boston metropolitan area. About 70 percent of the total area (roughly 190,000 acres) is undeveloped forest, field, wetland, or open water. Nestled amidst inland resources are numerous public outdoor recreation facilities - at least three state forests, several wetland/wildlife refuges, and several municipal parks and reservations. The carpets of estuaries, beaches, bluffs, and harbors interspersed along the coast also provide a mixture of opportunities for swimming, boating, shellfishing, saltwater fishing, waterfowl hunting, and nature study.

The bleak reality, however, is that inland recreational resources, at least, will fall vastly short of meeting 1990 demands for hunting, fishing, freshwater swimming, and camping, and prospects for adequate future recreational opportunities are dim in light of the intense development pressures throughout the North Shore planning area. However, coastal recreational resources - existing and potential - can meet significantly larger portions of future demands for beach swimming, picnicking, boating, and passive outdoor recreation (nature study and hiking).

Hunting and Freshwater Fishing

Presently over 90,000 acres of publicly and privately owned land are open to hunting and only 2,000 acres of coastal and inland wetlands (6 percent of the total) are open to hunting. Together these resources would meet a little more than a tenth of the 1990 demands for hunting within the planning area. Although the amount of wildlife resources in the planning area will never be able to meet the 1990 demands, these actions would greatly improve hunting opportunities.

- The U. S. Fish and Wildlife Service has proposed that the Department of Natural Resources acquire 15,000 additional acres of wildlife habitat by expanding existing state park boundaries and eliminating in-holdings.

- The U. S. Forest Service has proposed that the Department of Natural Resources and State Access Board work out an arrangement with private landowners whereby they would manage about 1,000 acres of wildlife habitat in Danvers, Groveland, Ipswich, Middleton, Newbury, Rowley, and Topsfield in exchange for public hunting access.

- The U. S. Fish and Wildlife Service and the Massachusetts Division of Fish and Game should maintain open to hunting 5,235 acres of wildlife habitat.

- The Department of Natural Resources should provide technical and legal assistance to local conservation commissions in order to improve procedures for wetlands protection as described in existing legislation.

- The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider obtaining public access rights-of-way and/or acquiring significant wetlands which are most important for wetlands wildlife production for hunting in these towns allowing hunting:
  Hamilton, Topsfield, Wenham, Groveland, Georgetown, Boxford, West Newbury, Newbury, Newburyport, North Andover, Ipswich, Rowley, Rockport, Wilmington, Woburn, Peabody, Danvers, Middleton, Essex, Manchester, North Reading, and Wakefield.

- The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider acquiring significant wetlands which are most important for wetlands wildlife production in these towns which do not allow hunting: Lynnfield and North Reading.

These recommendations would help to meet about 14 percent of the future demands for hunting, according to the U. S. Fish and Wildlife Services demand figures. Remaining demands will have to be met in other parts of or outside of the SENE region.

One option to this recommendation was providing public access to the 54,000 acres of upland wildlife habitat privately owned and presently closed to hunting. This solution was not recommended because public access for hunting is ill-advised in this planning area, most of which is under moderate-high development pressures. Hunting is not the only use for this open land and the activity could conflict with other recreational activities. Finally, according to preferences expressed at the Ipswich-North Shore workshops, public opinion opposes permitting public access to privately owned lands.

Only about an eighth of the total pond acreage and half of the total stream miles are publicly accessible to fishing. Much of the planning area's freshwater area does not naturally produce preferred fisheries. Furthermore, even if all the 78 ponds (over 4,000 acres) and 132 miles of stream were publicly accessible only about a third of the 1990 demands for freshwater fisheries would be met.

However, percent of these demands could be met through the following actions:

- The U. S. Fish and Wildlife Service has recommended that: The State Access Board acquire access rights to Four Mile Pond, Boxford; Gravelly Pond, Hamilton; Middleton Pond, Middleton; Spring Pond, Peabody; Swan Pond, North Reading; Wenham Lake, Beverly-Wenham; thereby assuring 725 acres of ponds for freshwater fishing.

- The Massachusetts Legislature should amend the Great Pond Act of 1869 (Chapter 384) to permit public access to ponds 10 acres and greater for fishing.

- The Massachusetts Division of Fish and Game should provide public rights-of-way to 15 streams of good and best fisheries potential. Assuming adequate public access and fisheries management, these streams could provide over 19,000 man-days of fishing per year.

- The Massachusetts State Access Board through acquisition of public rights-of-way and the Massachusetts Department of Public Works through the Great Ponds Act should be sure that public access for fishing is guaranteed to at least 41 ponds of ten acres or larger of good and best fisheries potential, thereby supplying over 75,000 man-days of fishing per year.

- The Massachusetts Division of Fish and Game should expand fishing license program to anglers younger than 12 and use revenues to manage freshwater fisheries.

These recommendations lean heavily on public access to streams and ponds as a means of meeting future demands for fishing. Insuring public access to ponds and streams via channels already existing is a less expensive means of providing fishing opportunities than the alternative of acquiring rights to all streams or ponds in the planning area, an action unable to meet the 1990 demands. The Great Ponds Law is a colonial statute for providing fisheries and other recreational opportunities whose potential has not been fully realized. Sixty-two of the 78 ponds in the planning area could be designated "great ponds" but the Department of Public Works and its predecessors

have so designated 18 ponds, only 3 of which are actively accessible. Presently a natural great pond is defined for recreational purposes as a natural pond 10 acres or larger, but for fishing purposes, at 20 acres or larger. Changing the definition of fishable ponds to 10 acres would greatly improve opportunities for fishing. Additionally, public and municipal cooperation in permitting public access to "great ponds" is needed in order to meet rising demands for freshwater based recreation. Acquiring rights-of-way to fisheries resources is recommended for streams and ponds not protected by this legislation.

Creating new wetlands and eliminating all restrictions on wetlands use were two options also considered. Creating new wetlands requires time and money and is inappropriate in an area so abundantly endowed with wetlands so long as the opportunity to protect these wetlands is seized now. The "do nothing option" implies the accelerated destruction of wetlands and consequently increased flood damages, loss of wildlife habitat and even larger future unmet needs for extensive outdoor recreation. Workshop participants favored strengthening local control of wetlands protection.

Inland Outdoor Recreation

Existing facilities for picnicking, camping, freshwater swimming and extensive outdoor recreation (hiking and nature study) are inadequate to meet 1990 demands. The Bureau of Outdoor Recreation estimates that roughly 1800 additional picnic tables (double the existing number), 15,500 additional acres of natural area, 110 acres of freshwater beaches, and 2,800 additional campsites (350 acres, 6 times the existing number) would have to be developed to meet highest possible 1990 needs. Additional campsites and freshwater swimming are the greatest short-run needs and the demand for additional campsites will increase at a higher rate than any other recreational activity. Actions which could help meet these needs include:

- The Division of Fish and Game, State Public Access Board, and towns should acquire rights-of-way to 15,000 acres of ledge for picnicking, camping, and extensive recreation. (See "Resource Base Configuration Map)

- The Division of Forest and Park Sites should expand the Harold Parker State Forest by acquiring 2,510 acres in Middleton, North Andover, and possibly along the Ipswich River, in addition to the A. B. M. site already being acquired.

- Private interests and towns should protect 128 unique cultural and at least 50,775 acres of unique natural sites through direct purchase easements, historic zoning and some local zoning. Those located in towns under high developmental pressures should be acted upon first.

- Division of Forest and Parks should acquire 1,700 acres, including Spring Pond, to create a Salem Highlands Reservation.

- The town of Lynn should acquire 575 acres to expand the boundaries of Lynn Woods.

- MDC should expand Breakhart Reservation in Wakefield and Saugus.

- The Department of Public Health should modify existing policy and permit non-contact recreation on public watershed lands, including Dykes Lake and Haskal Pond in Gloucester, and look into the feasibility of swimming and boating.

- The Department of Natural Resources should establish a state scenic rivers system and designate the Ipswich River as an initial component.

According to the Bureau of Outdoor Recreation, these actions could provide about half of the picnic facilities needed by 1990 (120 acres), about a quarter of the camp facilities needed by 1990 (90 acres), about 55 percent

of the total area needed for extensive outdoor recreation (7,500 acres) and about 3 percent of the acreage required for freshwater swimming (4 acres). These recommendations stress increasing recreational opportunities by increasing the amount of natural area available for outdoor recreation instead of intensifying the use of existing areas, thereby lowering the quality of the experience, or acquiring public access to privately owned lands. The large amount of unsatisfied camping and freshwater swimming demands will have to be met by private developments or by out-of-basin resources. These recommendations reflect the preferences of Ipswich-North Shore Basin Advisory Committee participants to expand existing facilities instead of intensifying the use of already existing facilities.

Coastal Resources and Recreation Opportunities

The coastline of the North Shore has long stretches of estuaries, beaches and rocky headlands interspersed with scenic harbors and villages. The North Shore area provides a significant opportunity to satisfy a large portion of both in-basin and out-of-basin swimming needs. Thirty-five beaches total 25 miles in length of which 18.8 are publicly owned, 3.9 private but open to the public, and 2.3 private with no public access. Of the 25.05 miles of coastal beaches, it is estimated that about 7.5 miles are unused because of inaccessibility, rock outcrops, lack of facilities or are partially covered with large stones or boulders leaving about 17.55 miles of existing usable beach.

Assuming an average beach width of about 50 feet, the total amount of existing usable beach is 17.55 miles x 5,280' x 50' = 4,633,200 feet, or about 106.36 acres. The amount presently open to the public is approximately 17.3 miles x 5,280' x 50' = 4,567,200 square feet or about 104.85 acres. Since the Massachusetts SCORP estimates that 6 percent of the population are active beach users, this percentage gives a basin demand of 90,100 swimmers, or about 50 square feet per person under maximum use conditions, given current beach availability.

During the summer bathing season, which extends from about June 1st through Labor Day, the more popular beaches such as Revere Beach, Lynn Beach, and Winthrop Beach, are overcrowded on extra warm days, particularly on the weekends. Many of the other beaches such as Wingarsheek, Crane's or Plum Island, are too far to travel for most metropolitan residents. Facilities would in any case be inadequate to handle the crowds developed by the large Boston metropolitan population unless entrance roads, parking areas, bathhouses and rest rooms are expanded.

Future swimming demands will increase by approximately 4 percent through 1990 and by as much as 33 percent by 2020, necessitating the development of expanded facilities at under utilized beaches as well as the provision of adequate transportation to those less accessible beaches. Even with these expanded services, however, the total in-basin demand, coupled with spillover Boston metropolitan demands, will be met only by allowing increased densities of swimmers on peak days, or by time-sequencing the turnover rate of beach users to accommodate the increased demand.

In order to partially satisfy the projected demand for swimming, the following actions are recommended:

- Curran's Beach in Swampscott and West Beach in Beverly should be acquired and opened by the towns for public use by local residents.

- The MDC should widen Winthrop, Revere and Lynn beaches to the maximum extent feasible given local conditions. This is expected to cost approximately $

- The MBTA should improve rapid transit facilities and bus service to Revere, Winthrop and Lynn beaches and initiate express bus service from

metropolitan Boston to Wingarsheek, Crane's and Plum Island beaches at a combined cost of approximately $

Although these actions are not enough by themselves to satisfy all swimming demand from the Ipswich/North Shore and some of the metropolitan Boston area, they are attempts to alleviate the present overcrowding and provide better access to outlying beaches. They will open an additional 10 acres of local swimming opportunities and create as much as 30 acres of beach in immediately accessible urban areas and make available 60 acres of extensive coastal beaches for use by the metropolitan resident.

Shellfishing

Historically, shellfish are very important in the coastal area north of Cape Ann in the many shallow coves and bays. The most important shellfish areas are in Newbury, Ipswich, Essex and Gloucester with a combined total of 2,054 acres of productive shellfish beds producing an annual crop worth $1,713,680. There are estimated to be a total of 251,983 bushels of harvestable clams on more than 2,700 acres of clam flats throughout the North Shore worth in excess of $2,780,000. each year.

Aside from the "Red Tides" of pathogenic algae, estuarine pollution is the biggest problem at this time. Current state health regulations have closed or restricted more than 1,350 acres of shellfish beds worth $1000/acre due to municipal, industrial or private discharges. However, rigidly enforced federal and state legislation, combined with construction of updated and improved treatment facilities (see the water quality section) will improve the existing situation. Dredging and filling have also destroyed clam beds in Gloucester, Newbury, Revere, Salem and Saugus.

Management of the shellfish resource is currently the responsiblity of the individual towns. Because those towns with greater resources devote more time to consciencious management practices than those with lesser amounts of shellfish beds, inconsistancies and fragmentation develop between towns. In some cases, where towns cannot afford to hire trained personnel for the job, mismanagement and underutilization results. Management of the resource might be more efficient if the Division of Marine Fisheries were provided with more personnel to provide technical assistance to these towns.

It is therefore recommended that:

- Present local management of shellfish resources be strengthened with increased technical assistance and coordinated management practices to be partially paid for by requiring recreational shellfish licensing.

- Aquaculture: Although the existing shellfish resources are sufficient to meet recreational demands through 1990, it is necessary to import shellfish to service restaurants for the commercial trade. With its extensive estuarine habitats, there should be greater emphasis placed upon commercial shellfish production.

Research on marine aquaculture has indicated that the species which could withstand biological requirements and still make economic returns are:

- The American oyster (which has been cultured in varying degrees in this country for over a hundred years), the hard clam (quahog), bay scallop, silver (Coho) salmon and American lobster.

All but the salmon are native to the area, all have been successfully cultured through every life stage to market size and all have considerable market value.

There are six farming zones in coastal environments: shore, intertidal, sublittoral, surface floating, mid-water, and seabed. Research has shown that preference should be placed on sites located in protected areas. Extensive culture operations require large land areas for ponds, whereas, intensive culture requires dense propagation per unit area. Because the availability of suitable coastal areas on the North Shore is limited to protected embayments, intensive culture would be used for these waters in order to provide continual optimum conditions for growth and development. The following action is recommended:

- Consistent with SENE resource maps (see section on "Areas of Particular Concern") showing high quality estuaries, The State Division of Marine Fisheries should consider Plum Island Sound and Essex Bay for potential intensive aquacultural leasing sites.

- The General Court should develop additional aquacultural legislation which exempts growers from protective state and federal laws which apply to the exploitation of natural crops.

- The State Division of Marine Fisheries should be funded to take a more active role in providing technical assistance to communities in locating suitable sites and evaluating private corporations for the necessary technical and administrative qualifications prior to granting aquacultural licenses.

- The State Department of Public Health should consider revamping its regulations concerning shellfish beds to allow potential use of treated effluent for shellfish propagation.

Boating Facilities

Due to the tradition of seafaring and many fine natural harbors, greater pressure for boat facilities will occur in the coastal towns of Marblehead (already congested), Beverly, Salem, Manchester, Winthrop, and the Danvers River area; the commercial harbors (petroleum and some fish) in Beverly and Salem. The need for expanding these harbor facilities stems from unmet development pressures emanating from the Boston metropolitan cities. The 1972 recreational boating fleet was 10,650,075 sportfishing or charter boats and 300 commercial fishing boats. There are 43 launching ramps. As many as 3,500 additional boats might need to be accommodated by 1990. Recreational facilities could be expanded at Danvers and Salem with more marina facilities and fore- and aft- moorings. There are opportunities at Beverly, Lynn, and Winthrop for marina expansion, but these harbors are too exposed for fore- and aft- mooring. There is a good chance for alleviating Marblehead Harbor's congestion by breakwater construction in conjunction with fore- and aft- moorings and marina expansion. It is recommended that:

- Existing recreation and commercial channels be maintained by the Corps of Engineers in 14 harbors (Winthrop Harbor, Saugus River, Lynn Harbor, Beverly Harbor, Danvers River, Porter River, Salem Harbor, Newburyport Harbor, Ipswich River, Essex River, Annisquam River, Rockport, Gloucester and Manchester Harbors). These will cost $

- About a dozen existing private marina facilities should be expanded by private funding at Newburyport, Winthrop, Lynn, Gloucester, Manchester, Marblehead, Salem, Beverly Harbors and Pines, Saugus, Danvers, Porter, Bass, Ipswich, Essex, and Annisquam Rivers, to accommodate a total of 425 recreational boats and another large private marina should be built in Salem.

- Establish state and local saltwater boating advisory committee to coordinate orderly growth of boating use in Newburyport, Ipswich, Gloucester, and Manchester.

LIVING WITH THE FORCES OF NATURE

Introduction

Although there is extensive development along the banks of the principal rivers in the planning area, there is little history of floods causing major damage. At the U.S. Geological Survey gaging station on the Ipswich River at Ipswich, where published records have been maintained since 1930, the peak discharge of March 1968 was the highest since the gage was established. The North Shore is vulnerable to storms with winds from the north and east (the well known "northeasters"). Major tidal flooding occurred in this area in December 1959 with a tide height of 9.1 feet (mean sea level) at Revere.

Wetlands in the Ipswich-North Shore area play an important role in keeping down the extent and costs of floods. Yet, the rate of wetlands destruction in the planning area is estimated by the Corps of Engineers at more than double the state-wide average of 1 percent annually as determined in a 1967 study by the Massachusetts Department of Natural Resources. With increasing development in flood plain areas and loss of existing natural valley storage areas, flooding could become more frequent and more serious. In general, the study's recommendations emphasize that both inland and coastal flood-prone areas be protected from development by using non-structural solutions wherever possible such as maximizing use of wetlands and strict development criteria. Only where there is high-value development in small concentrated areas will development be protected from flooding by using structural solutions. Recognition of the multiple values of wetlands--not just as natural flood retention areas, but for wildlife habitat, water supply recharge, recreation, and landscape quality as well -- further strengthens the importance of wetlands protection as a means for reducing flood damages.

Inland Flooding

The flood problem in the Ipswich-North Shore is similar to the difficulties being experienced in many communities with pressure for development. Residential and commercial developments have occurred on natural valley storage areas and floodways vulnerable to flood inundation. Such developments have speeded up runoff and have accelerated the flood problem. In many sections, channels have not been maintained and debris has been allowed to accumulate.

Ipswich and Parker Rivers Area. Riverbank flooding occurs nearly every year in the northern areas of the basin. The rivers in this area, such as the Ipswich and Parker, are characterized by relatively flat profiles with extensive flood plains that are conducive to sluggish runoff. High flood levels on these streams usually result from storms producing large volumes of runoff rather than intense, short duration rainfall. High water tables and flood damages have been experienced in the built-up areas of Wilmington, North Reading, West Peabody and Ipswich.

The greatest flood of record for the Ipswich River occurred in March 1968, with a discharge of 2680 cfs at the Ipswich gage -- the average discharge is 198 cfs. A storm of this magnitude has a frequency of occurrence of approximately once in 50 years. Damages produced by a storm equivalent to this one are estimated at approximately $300,000. Of these, over half would be sustained by industrial firms and the remaining at various points throughout the watershed. The two major damage areas consist of industrial flooding within the towns of Wilmington and Ipswich. (In this latter case, however, the industrial firm subject to the significant damages has plans to move outside the region.)

The Ipswich River flows for much of its course through marshy meadows with little fall and sluggish current. There are only 3 dams on the

river, practically no rapids, and many swamp and marsh areas scattered throughout the entire watershed from Wilmington to tidewater in the town of Ipswich. Wetlands total 12,000 acres.

Wetlands in the Ipswich River watershed are helping to restrain potentially damaging flood flows, although there are damages to flood plain development especially in Wilmington and Ipswich. One of the three largest natural valley storage complexes occurs in parts of Reading, North Reading and Lynnfield; a second in Topsfield, Hamilton, and Wenham; and a third along the upper Fish Brook in North Andover and Boxford. These large natural valley storage areas also function as very productive wildlife habitats; among the most important are Wenham Swamp and Ipswich River Sanctuary existing in Topsfield, Hamilton and Wenham; upper Fish Brook in North Andover and Boxford; and upper Parker River in Groveland, Georgetown, and Boxford. Priority attention should be given to areas subject to high development pressure.

Headwater wetlands are controlling flood flows efficiently in the Parker River watershed, where urban development has consumed very few of the numerous small wetlands.

Both large and small wetlands in the Ipswich and Parker watersheds present the opportunity to naturally regulate floods, and, at the same time, to provide productive wildlife habitats.

Saugus River Area. The total swamp and salt marsh area in the Saugus River watershed is about 3,100 acres, approximately 10 percent of the total watershed. Lynnfield and Wakefield in the Saugus basin have headwater wetlands important both for restraining potential floodflows downstream and for wildlife production. They also have warm water ponds with high quality fishing; the potential to provide nature study, hiking, and other extensive outdoor recreation, particularly in Wakefield. What distinguishes these towns is the flooding problem in headwater tributaries and downstream in the Saugus mainstem. There are moderate flooding problems along tributary Mill River in Wakefield because much of the drainage is discharged through deteriorated channels due to silting and inadequate culverts. The local repercussions of such damages are nuisance cellar and landscape flooding. Downstream these inadequacies, combined with high flows from Bennett's Pond Brook in Wakefield, Melrose and Saugus augment high flows in the Saugus River in the town of Saugus. Lynnfield experiences similar nuisance drainage problems on the edges of large wetland areas which have been developed. Lynnfield and Wakefield have the two mutual problems of remedying these immediate flooding problems which impact local and downstream areas and of averting more extensive flood damage by protecting wetland areas from future development for natural storage and wildlife production.

Four floods of significant proportions have occurred on sections of the Saugus and two of its tributaries -- the Mill and the Pines Rivers -- in recent years: 1936, 1955, 1962 and 1968, with the maximum flood of record resulting from the 1962 storm. A recurrence of the 1962 flood levels under 1972 conditions would cause losses estimated at approximately $200,000 on these streams. At a stage 2 feet higher than the 1962 flood event, the losses are estimated at $2.5 million with 75 percent of the loss occurring on the Saugus River (Saugus-Revere), 8 percent on Bennett's Pond Brook and 17 percent on the Saugus River with serious flooding in Saugus and Revere due to wetland destruction in the headwaters, undersized stream channels, and development of areas exposed to major coastal storms. Extensive commercial development along U.S. Route 1 in the southern areas presents a high flood damage potential.

Wetlands and flood plains have been included in the SENE resources map

categories "A", and "B", which should be protected. Because many communities in the planning area have relatively low population densities in comparison with the rest of the SENE study region, opportunity exists for a program of natural valley storage protection such as that developed by the Corps of Engineers for the upper Charles River Basin.

In general, the recommended approach to flood plain management and wetlands protection for the Ipswich-North Shore area is a combination of rigidly enforced flood plain zoning and selected channel improvements along with preservation of natural valley storage areas. The four alternative approaches considered were: (1) flood plain zoning with selected channel improvement and preservation of natural valley storage areas; (2) flood plain zoning and/or removal of flood prone buildings from flood plain; (3) dikes and walls to protect flood prone areas; and (4) removal and/or flood proofing all buildings within the flood plain.

Protection of existing wetlands in the Ipswich River watershed, for example, would preserve nearly 5,000 of the existing 12,000 acres by 1990 (at the 2 percent per year loss estimated) for that portion of the planning area. If these wetlands were destroyed, damages produced by a storm similar to the one that occurred in March 1968 would cause damages three times greater than those sustained in 1968, or approximately $900,000. But the value also includes ground-water recharge, fish and wildlife habitat, curbing erosion, recreation (both hiking and viewing, and hunting), and landscape quality.

It is recommended that the following actions be taken:

- Continue maximum use of non-structural methods to prevent flooding such as protection of natural valley storage areas, flood insurance, and flood plain zoning. Particular attention should be given to areas susceptible to high development pressure.
- The Corps of Engineers in cooperation with the Massachusetts Department of Natural Resources should study natural valley storage areas and set up a program for acquiring those areas most significant for flood damage protection. Particular emphasis should be given to protection of wetlands classified as unique natural areas and those located in areas subject to high and medium development pressure.
- Towns should continue and encourage transfer of wetlands titles to state or to conservation commissions with income tax deductions as reimbursement.
- The Department of Natural Resources should continue to enforce existing wetlands legislation.
- The Department of Natural Resources should provide technical and legal assistance to local conservation commissions in order to improve procedures for wetlands protection as described in existing legislation.

The Ipswich-North Shore Basin Advisory Committee supported the wetlands protection aspect of this set of recommendations, particularly the special assistance from the state Division of Conservation Services to ease the conservation commissions' responsibilities vis à vis wetlands protection. Participants preferred strengthening local control of wetlands protection more than an alternative proposal of sharing this control with a regional body.

It was for these reasons, along with the wetlands laws which resulted in inclusion of wetlands and flood plains into categories "A" and "B", respectively, and therefore a general recommendation of no development for these areas has been made.

With the widespread extent of wetlands and flood plains available to minimize flood damage through natural valley storage, there are few

structural solutions recommended for the Ipswich-North Shore area.

To reduce recurring damages in the industrial area located upstream of the Main Street bridge in Wilmington, it is recommended that:

- The Corps of Engineers should construct a diversion channel from the Burlington Avenue bridge to the Wildwood Street bridge to divert excessive flood flows around the industrial and recreational area that was subject to flooding in March 1968. (Cost of construction would be approximately $100,000; the flood stage would be reduced nearly 2 feet for a recurrence of the flood of March 1968.)

- Towns or private owners should remove or flood proof existing flood prone structures where structural solutions prove more expensive than the value of the property protected.

Coastal Flooding and Erosion

Frequent tidal flooding occurs in the cities of Revere, Saugus and Lynn particularly during "northeasters." These storms cause extremely high tides which inundate coastal lowlands and cause overtopping of seawalls.

The planning area also suffers from continual coastal erosion, damage to public and private property, and wind erosion of the sand dunes. Two major storms caused extensive tidal flood damages along the North Shore shoreline in December 1969 and January 1961. The damages were estimated to be $179,000 and $300,000 respectively.

Critical erosion occurs particularly along the coastal beaches. A number of studies of beach erosion control have been undertaken by the U.S. Army Corps of Engineers in cooperation with, in some cases, the Commonwealth of Massachusetts: Plum Island Beach (action taken but subsequent severe erosion), Nahant Beach (authorized, but no work done), Revere Beach (authorized, some work done but subsequent severe erosion), Revere and Nantasket Beaches (preconstruction design work in progress at Revere Beach -- the estimated first cost of construction is $3.7 million, of which the federal share is estimated at $1.85 million).

Coastal wetlands in the Ipswich-North Shore study area comprise almost 13,700 acres. Most of this total, about 82 percent is found in the towns of Essex, Ipswich, Newbury and Rowley. Coastal wetlands which have been recognized as unique natural areas include: the wetlands in the Essex River - Hog Island area of Essex; the Pearce Island and Coles Island areas of Gloucester; the wetlands in Parker River National Wildlife Refuge in Ipswich, Newbury, and Rowley; the wetlands in the Ipswich River Wildlife Management Area in Essex and Ipswich; the Ipswich marshlands around the Ipswich, Eagle Hill and Rowley River estuaries; the Parker River Marsh and flood plain area in Newbury; the Rowley Marsh and Wildlife Management Area in Newbury and Rowley; the Rowley River and environs wetlands; and the few acres of salt marshes in the Northeast Wildlife Management Area.

In the southern Ipswich-North Shore study area, almost all the coastal wetlands are surrounded by urban land uses and are threatened by encroaching development. The remaining wetland areas are characterized as irreplaceable. In order to insure future preservation of remaining coastal wetlands, it is necessary to have expanded public ownership coupled with tougher enforcement of protective laws.

For coastal erosion problems, the following measures for restoration and protection of erosion areas were: (1) planting and fertilizing beach grass areas of the existing dunes to reduce deflation (erosion by the wind); (2) restore and protect the barrier beaches by direct sand placement (artificial nourishment) and construction of rock or concrete walls, rock groins, and backup dikes of sand and gravel where required, and (3) protection of erodible bluffs with rock revetment, seawalls, or bulkheads along public or

privately owned property.

Because the beaches are now used to near their physical capacity, it is obvious that more beach area will be needed by 1990. Because of physiographic limitations and ownership, there is little opportunity to enlarge the beaches to accommodate additional people. The beaches of Plum Island, Ipswich (Crane and Wingaersheek Beaches), Lynn, Nahant, Revere and Winthrop offer the greatest opportunity for enlargement and development.

At the present time federal participation in tidal flood protection does not appear to be justifiable. Therefore, the next two recommendations focus on local and state actions. The following actions calling for federal participation are addressed to erosion problems.

It is recommended that:

- Towns should protect coastline through zoning and, where economically feasible, through limited purchase.

- The state in its coastal zone management program should preclude further development on marshes and barrier beaches (SENE category "A"), thereby assuring more open space for future recreation uses and landscape quality; and provide a guide for future planning and management which would encourage development on areas less susceptible to adverse environmental impacts.

- The Corps of Engineers together with the Commonwealth should construct only where economically feasible, seawalls, bulkheads, and revetments in urban, coastal suburban, and coastal towns, and particularly for beach restoration and protection. This action will also serve to protect loss of land, and loss of tax revenues. In other instances, prohibit redevelopment following storm destruction, such as in the Plum Island Beach area or on the dunes behind Wingaersheek Beach.

- The Corps should also construct groins and jettys only where economically feasible, and nourish and stabilize critical coastal erosion areas, particularly beaches. Dune stabilization with beach grass, at such areas as Plum Island Beach or Castle Neck, would prevent loss of sand into estuaries and enhance nearby shellfish beds.

- The Corps of Engineers and Massachusetts Department of Public Works should consider allocating foreshore protection monies to the purchase of shorefront properties for recreation in coastal high hazard storm inundation areas in lieu of continued expenditures for seawalls, which in some cases are more expensive than the properties protected.

FINDING PLACES FOR THOSE SERVICES EVERYONE NEEDS BUT NOBODY WANTS

As elsewhere in the SENE study region, the Ipswich-North Shore Planning Area has its share of "unwelcome neighbors", facilities necessary for the continuance of life as we know it but unpleasant enough to cause significant controversy when proposed for any community. Sand and gravel extraction sites, power plants and petroleum storage or refining facilities are good examples of facilities vitally needed but seldom welcomed. Each of these topics has significant regional implications and is developed more fully in Chapter 2. The discussion and recommendations below relate only to basin level issues.

Sand and Gravel Extraction

While there is probably no way of knowing the total potential yield of the numerous small sand and gravel extraction sites in the Ipswich-North Shore Planning Area, information does exist on the major sites. The major opportunities for developing sand and gravel mining lie in the northwestern section of the planning area in Georgetown, Rowley, Topsfield and Boxford. The Bureau of Mines estimates a total reserve for the basin of approximately 15 million cubic yards of sand and gravel in these areas. They project that these reserves will be adequate to meet construction needs in the area until 1990.

The availability of these existing deposits for meeting demands to 1990 and, for that matter, the potential of other sites in the planning area to meet needs further into the future, is seriously threatened by competition by other more "acceptable" uses. Topsfield and Boxford and, to a lesser extent Georgetown, lie on the northernmost thrust of the high development pressure area of the North Shore. Residential development in these towns is among the most rapid in the planning area. The real estate tax structure, of course, provides every incentive for residential development. Were alternative sources of sand and gravel available, this competition would pose little problem. In fact, however, alternatives do not exist. Unless homebuilders are willing to pay skyrocketing prices for imported sand and gravel or can wait until the feasibility of offshore mining is established, the existing sites in the planning area will have to be preserved as important resources.

Accordingly, it is recommended that:

- The Massachusetts Division of Mineral Resources should, as a priority activity, identify and map potential sand and gravel deposits in the planning area.

- The appropriate town zoning boards should be encouraged by the Massachusetts Division of Mineral Resources in cooperation with the U.S. Bureau of Mines to protect identified mineral resources sites. The Division should establish state standards for mineral extraction operations and require, by means of a permit, mine operators to make provisions for land reclamation after extraction. Also, to encourage the relaxation of restrictive local zoning for mineral activity, the Division should develop a public education program and technical assistance to the localities to convince the public as to the ways in which mining can be conducted in a socially and environmentally acceptable manner. The local planning boards should develop local regulations in conformance with state standards and plan the redevelopment of mineral extraction sites.

Power Generation and Power Plant Siting

With its abundance of low density coastal land and cold water, the Ipswich-North Shore area, less than 40 miles from the region's major power demand center, would appear to be a prime target for power plant siting. At the same time, however, the area contains one of the largest and most valuable wetland networks on the East Coast. Some idea of the level of citizen opposition which might be expected from proposing a power plant in the northern portion of the planning area can be approximated by looking at the Seabrook nuclear proposal a few miles over the New Hampshire border. Construction at that site has been held up for three years by environmental protests.

The only significant proposal currently on the boards by the electrical utility industry is the addition of Salem Harbor #5, a 880 megawatt fossil baseload plant to be constructed by 1980. That proposal is in line with SENE policy to concentrate future generation facilities at existing sites and prohibiting use of either "A" or "B" land categories for power plant siting or other heavy development.

The study further recommends that:

- The utility industry should reconsider an 800 MW fossil baseload plant at the existing Lynnway site by 1985.

- The industry, in close coordination with the Massachusetts Coastal Resources Management Program, should investigate suitable sites for an 800 MW nuclear plant on the North Shore as an alternative to planned Cape Cod or South Shore sites.

- The legislation establishing the Massachusetts Electrical Facilities Siting Council should be amended to empower the Council to establish standards and criteria for power plant siting and to commission such studies as are necessary to identify suitable sites to meet future needs.

Petroleum Distribution, Storage and Refining

While the SENE region's petroleum system is discussed in greater detail in Chapter 2 of this report, the Ipswich-North Shore planning area warrants special attention in the light of recent developments. The Massachusetts Port Authority (Massport) has released an interim report identifying, in order of preference, sites off Newburyport and Nahant as potential deepwater petroleum product receiving terminals. On-shore storage facility sites are also identified.

Apart from the regional implications of the report, the SENE study's resource capability information indicates considerable development limitations at both of the on-shore sites.

The tank farms shown in the Massport report are located in Newburyport in an industrial zone and on a landfill site in Saugus. The Newburyport tank farm site is directly above a significant ground-water reserve. Heavy development on this site could seriously jeopardize use of this reserve for future water supply. Also, there is a possibility that some of this ground water, and nearby surface water, may drain into the upper Artichoke Reservoir, Newburyport's present water supply. If malfunction should allow oil to leak from the tank farm operation facilities, there is the chance that it might find its way into this public water supply. Field investigations would be needed to determine the precise direction of the ground water's flow. In addition, the numerous small inland wetlands and brooks throughout the upper North Shore, including those in the New-

buryport tank farm site (draining into the Little River tributary) compose the headwaters of the Parker River. Undeveloped, these areas are important for reducing flood hazards and damage costs downstream, and for maintaining high water quality in downstream estuaries.

The Saugus landfill site poses severe problems. The soft peaty conditions, which underlie the site, discourage buttressing the construction with underground pillars. The problem of removing the landfill will, as noted in the report, create problems of locating alternative landfill sites, as well as problems of transporting and handling partially decomposed and highly acidic, odorous materials.

The SENE study agrees with the fundamental concept behind the Massport investigations: that a single deepwater oil terminal is preferable to steady increases in risky tanker traffic in the region's harbors. At the same time, more information on the opportunity costs of the sites identified is needed. The network of wetlands throughout the North Shore are vital breeding grounds for wildlife and provide food sources and spawning grounds for the region's valuable offshore fisheries. Of the five national coastal wildlife refuges, two of them -- the Parker River and Thatcher Island Refuges -- are within a few miles of the Newburyport terminal site.

Accordingly, the SENE study recommends that:

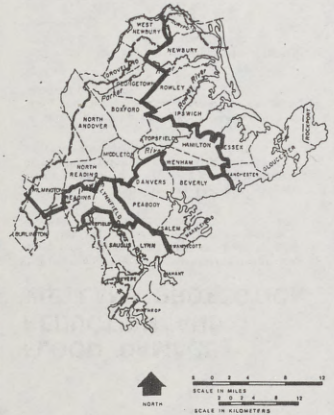
- Any investigation of potential oil terminal sites should be SENE-wide or New England regionwide in scope, not limited to the North Shore of Massachusetts.

- The states should use SENE study data to assist in the identification of potential tank farm locations and pipeline rights-of-way; to prepare reactions to environmental assessments and rankings of such site proposals and develop guidelines and procedures for the development of the best sites in order to be able to advise and assist private and/or public developers.

- Refineries and storage facilities should be located inland near existing heavy industrial facilities or in areas having suitable permanent installations or utilities capable of being developed to service their needs with minimum environmental or social disruption. Areas within SENE land use categories "A" or "B" should not be considered for sites and "C" areas should be located inland and their related tank farms and pipeline pumping stations should be located away from the coast.

1 URBAN

LYNN
NAHANT
REVERE
SAUGUS
WAKEFIELD
WINTHROP



IPSWICH-NORTH SHORE PLANNING AREA

ACTIONS

WATER SUPPLY

The ultimate responsibility for the provision of water supply under current state legislation is vested in the municipalities. The following actions are therefore addressed to the specific municipalities or water supply districts. These actions are aimed at changing the current responsibility "of provision of supply" to one of management of the resources as a total system. The Water Resources Commission should take the necessary steps to assure that these actions are implemented as the municipalities request them to do so. The legislature should be strongly encouraged to act quickly and forcefully in providing for the creation of proposed water management districts.

- Continue surface water diversions from Ipswich River with in-town storage to serve Lynn.

- Acquire additional water supplies from MDC system to serve Nahant, Revere, Saugus, Wakefield and Winthrop.

WATER QUALITY

The municipality has primary responsibility for planning and management of wastes; these actions are therefore directed to them and to the specifically named sewer districts. The state of Massachusetts has developed, through its division of Water Pollution Control, water quality standards for all water and is developing a continuing planning process which includes the determination of allowable maximum daily loads of pollution to assure high quality waters. The state is considering these actions in its basin plan and in its review of applications for federal grants to municipalities for sewage treatment plants. EPA should consider these actions in the review of the state permit programs.

- Construct a secondary (minimum) WWTF with ocean outfall at Lynn Harbor to serve Lynn, Saugus and Nahant.

- Continue MDC sewer service serving Winthrop and Revere.

- Investigate the need for storm water treatment in all towns.

OUTDOOR RECREATION

Lynn should acquire 575 acres to expand the boundaries of Lynn Woods.

- Appropriate state and city agencies should jointly develop a major program of increasing inner-city recreation opportunities through use of available acquisition means including fees where possible and through use of increased efficiency of use of existing areas and multiple uses of public lands; including:

  - Develop a coordinated approach of all public, voluntary, and private groups sponsoring or promoting recreation.
  - Increase the availability of community school facilities.
  - Develop multiple use of sewer line rights-of-way, highway corridors, public works lands and parking areas.
  - Develop improved pedestrian access to existing urban parks.
  - Develop a major program of soliciting land and easement donations.
  - Develop a formal review system of tax title lands by planning and recreation agencies.
  - Develop use of phased out sanitary landfills for urban recreation.
  - Develop adequate recreation and open space in urban renewal areas.
  - Consider the feasibility of re-routing commuter oriented commuter bus service to better serve recreation areas, especially major beaches.
  - Develop proposed MDC recreation area at Belle Isle Marsh.

- Develop MDC proposals for Revere Beach and Lynn Beach including widening of Revere Beach to maximum extent feasible given local conditions and consider the feasibility of widening Winthrop Beach.

- Construct major private expansion of boating facilities in Winthrop Harbor, Pines River, Saugus River and Lynn Harbor.

- Provide public landing ramps by state DPW and docks at lower Belle Isle Inlet at Winthrop.

- Continue maintenance by Corps of Engineers of existing commercial and recreational navigation channels in Winthrop Harbor, Saugus River and Lynn Harbor.

o The Massachusetts Legislature should amend the Great Pond Act of 1869 (Chapter 384) to permit public access to ponds 10 acres and greater for fishing, including Upper and Lower Ponds in Saugus.

o The Massachusetts Division of Fish and Game should confirm the fishing potential of these streams should initiate a program of acquiring lineal rights of way within a minimum width of 20 feet: Saugus River, Lynn Harbor, Lynn-Saugus.

o The Massachusetts Department of Public Works should designate these ponds 20 acres and larger and highly productive for freshwater fishing as "Great Ponds": Suntang Lake, Lynnfield-Peabody.

o The Massachusetts Department of Public Works should designate these ponds 20 acres and larger and highly productive for freshwater fishing as "Great Ponds": Walden Pond, Lynn-Lynnfield-Saugus; Sluice Pond, Lynn; Breeds Pond, Lynn; Birch Pond, Lynn-Saugus.

o MDC should expand Breakhart Reservation in Wakefield and Saugus.

COASTAL AND MARINE MANAGEMENT

- The MDC and MBTA should jointly develop a program of improving urban beaches through improved water quality where needed, redevelopment and/or acquisition of facilities, taking better advantage of mass transit access, or the feasibility of beach widening measures and re-routing commuter oriented weekday bus service to better serve major beaches on weekends.

- The Massachusetts Coastal Zone Management Program, New England River Basins Commission and MIT Sea Grant should immediately undertake intensive environmental impact study of Massport's proposed offshore deepwater tanker terminal at Little's Point.

LAND USE

The Growth, Development Pressures and Land Use narrative in this basin report includes general land use actions intended for consideration by the regional planning agencies, local planning boards, the state Department of Community Affairs, and the Department of Natural Resources.

- The utility industry should reconsider a new 800 MW fossil fuel plant at the old Lynnway site in Lynn.

FLOOD DAMAGE REDUCTION AND WETLAND PROTECTION

° Towns and the state should continue maximum use of non-structural methods to prevent flooding including wetland protection, zoning, and flood insurance.

° The Corps of Engineers together with the Commonwealth should construct only where economically feasible seawalls and other protective projects.

° Towns should protect coastline through zoning and, where economically feasible, through limited purchase.

- Communities should prevent redevelopment of flood prone coastal areas after storm destruction.

CHARACTERISTICS

WATER SUPPLY AND QUALITY

- More developed intermediate city, fringe city towns.
- Land development has pre-empted all groundwater inbasin surface water.
- Winthrop, Revere, Saugus, and Nahant are almost completely dependent on out-of-basin water supply from MDC.
- Wakefield partially served by MDC.
- Lynn has own municipal supply, dependent primarily on water diverted from Ipswich River as well as local reservoirs.
- Wakefield, Revere, Winthrop divert substantial portion of wastewater out of Ipswich- North Shore planning area via MDC system to Boston Harbor.
- Saugus utilizes septic tanks, transfers 35% wastewater through Lynn to be discharged as raw sewage into Lynn Harbor.
- Lynn discharges all raw sewage into Lynn Harbor.
- Nahant discharges all raw sewage to Broad Sound.
- All town exhibit urban run-off characteristics.
- Serious runoff problems in Saugus, Lynn, & Nahant.
- Lynn has combined sewer overflow problems.
- Class SC waters in Lynn Harbor and in Saugus Pines estuary.
- Saugus Pines estuary also affected by DeMatteo land fill operation.

WATER RELATED LAND USE

- Wakefield: headwater wetlands important for both restraining potential flood flows downstream and for wildlife production.
- Danvers; excellent wildlife wetland habitats along Ipswich R. (State Hospital Grounds).
- Saugus and Revere wetlands have given way to development.
- Wakefield: flooding problems in headwater tributaries and downstream.
- Moderate flooding problems along Mill R. because much drainage discharged through deteriorated channels and inadequate culverts.
- Nuisance cellar and landscape flooding in Wakefield.
- Sections of Mill R. and Bennett's Pond Brook having urban floodplain development suffer flood damages and augment high flows with urban runoff.
- Lynn, Nahant, & Winthrop: little encroachment of small streams that drain towns; development in coastal areas exposed to only moderate tidal flooding.
- Winthrop's potential floods and coastal erosion problems averted by offshore rock breakwater.
- Frequent flooding of Mill R. & Bennett's Pond Brook in Saugus; high flood stages on Saugus Pines tidal estuaries.
- To remedy short term annual floods, channels should be upgraded.
- For long term protection damages, remaining natural storage areas must be protected from development.
- Major recreational boating facilities in Winthrop and Danvers River area.
- Opportunities at Lynn, & Winthrop for marine expansion, but harbors too exposed for fore-and aft-mooring.
- Problems in coastal urban towns are in meeting recreational needs and commercial navigation needs soon.
- Recreational facilities in Revere insufficient to meet existing demands.
- Marina facilities in Saugus and Pine Rivers could be expanded.
- Revere Beach: key to Boston Area Beach system because accessible by public transportation.
- Preliminary design work initiated for expansion and protection of Revere Beach.
- Overburdened beaches in Revere, Lynn and Nahant.
- Need for expanding beach and harbor facilities due to development pressures from Boston Metro cities.
- Mass. Port Authority proposal for deep water offshore terminal near Winthrop.

Extensive and intensive recreation opportunities could be expanded by enlarging Lynn Woods.

LAND USE

- Lynn, Saugus, Revere have between 50 - 75% residentially zoned areas
- Lynn zoned 10 - 25% open space.
- Recent residential or commercial development has occurred rapidly in Wakefield.
- Major basin airport located in Winthrop.
- Large railroad yard in Lynn.
- Winthrop & Revere serviced by MBTA.
- Large percentage of land use in transportation in Lynn, Nahant, Revere, and Winthrop.
- Small gas turbine unit in Lynn.

1 COASTAL

ESSEX
GLOUCESTER
IPSWICH
MANCHESTER
NEWBURY
NEWBURYPORT
ROCKPORT
ROWLEY



IPSWICH-NORTH SHORE PLANNING AREA

ACTIONS

WATER SUPPLY

The ultimate responsibility for the provision of water supply under current state legislation is vested in the municipalities. The following actions are therefore addressed to the specific municipalities or water supply districts. These actions are aimed at changing the current responsibility "of provision of supply" to one of management of the resources as a total system. The Water Resources Commission should take the necessary steps to assure that these actions are implemented as the municipalities request them to do so. The legislature should be strongly encouraged to act quickly and forcefully in providing for the creation of proposed water management districts.

- Construct regional surface water reservoir 30-B in Ipswich to serve Gloucester, Rockport, and Ipswich.

- Develop additional groundwater resources to serve the western end of Newbury, and acquire additional water supplies from Newburyport to serve the eastern end of Newbury.

- Develop additional groundwater resources to serve Essex and Rowley.

- Continue existing surface and groundwater supplies to serve Manchester and Newburyport.

WATER QUALITY

The municipality has primary responsibility for planning and management of wastes; these actions are therefore directed to them and to the specifically named sewer districts. The state of Massachusetts has developed, through its division of Water Pollution Control, water quality standards for all water and is developing a continuing planning process which includes the determination of allowable maximum daily loads of pollution to assure high quality waters. The state is considering these actions in its basin plan and in its review of applications for federal grants to municipalities for sewage treatment plants. EPA should consider these actions in the review of the state permit programs.

- Upgrade to a minimum of secondary treatment the wastewater treatment facility with ocean outfall at Ipswich to serve Ipswich.

- Construct a secondary (minimum) WWTF with an ocean outfall in Essex to serve Essex.

- Construct a secondary (minimum) WWTF with an ocean outfall in Gloucester to serve Gloucester.

- Construct a secondary (minimum) WWTF with ocean outfall in Rockport to serve Rockport.

- Continue existing wastewater treatment in Manchester.

- Continue individual subsurface disposal where low density and soil conditions are favorable in Rowley, Newbury and Newburyport.

OUTDOOR RECREATION

- The towns, MDC and DNR should continue to manage existing public natural beach areas in a primarily natural state for extensive recreation and dispersed swimming. Increased beach capacity should be provided through the MTA via improved public transportation and additional parking where necessary at major transportation routes away from the fragile beach environment with jitney service to the beach. Major beaches for which such measures could be instituted include:
  Cranes
  Wingaersheek
  Plum Island

- The DNR should exchange state land at the southern tip of Plum Island for the U.S. Fish and Wildlife Service developed beach area at the northern end to allow for an expansion of beach facilities there. This should be done in conjunction of wilderness designation of portions of the wildlife refuge.

- The towns should develop additional public accessible land at Halibut Point and Rockport for extensive recreation.

. Acquisition by Massachusetts Dept. of Natural Resources of a 3,000-acre natural area for extensive recreation in Essex north of interchanges 5 and 6 on Route 128.

. Acquisition by Massachusetts Dept. of Natural Resources and/or local towns of a large natural area in the interior of Cape Ann.

. Acquisition by Massachusetts Dept. of Natural Resources and/or the Trustees of Reservations of some of the islands along the North Shore, particularly those not inhabited, including: Kettle, Groves, Milk, Salt and House Islands.

- The Department of Public Health should modify existing policy and permit non-contact recreation on public watershed lands including Dykes Lake and Haskall Pond in Gloucester, and study the feasibility of swimming and boating.

o The U.S. Forest Service has proposed that the Department of Natural Resources and State Access Board work out an arrangement with private landowners whereby they would manage Ipswich, Newbury, Rowley in exchange for public hunting access.

o The Massachusetts Division of Fish and Game should confirm the fishing potential of these streams and initiate a program of acquiring lineal rights of way within a minimum width of 20 feet: Parker River, Plum Island Sound, Newbury; Little River, Parker River, Newbury; Mill River, Parker River, Newbury; Ipswich River, Plum Island Sound, Ipswich.

- Private interests should be encouraged by the communities to construct moderate expansion of boating facilities in Newburyport Harbor, Ipswich River, Essex River, Annisquam River, Gloucester Harbor and Manchester Harbor.

- The towns and the Corps of Engineers should continue maintenance of existing commercial and recreational channels in Newburyport Harbor, Ipswich River, Essex River, Annisquam River, Rockport Harbor, Gloucester Harbor and Manchester Harbor.

- The DNR in conjunction with appropriate RPA's should establish a state and local boating advisory committee to help coordinate orderly growth of boating use in the towns of Newburyport, Ipswich, Gloucester, and Manchester.

- The Coastal Zone Management Program, the NE River Basin Commission and MIT Sea Grant should undertake intensive environmental impact study of Massport's proposed offshore deepwater tanker terminal in Newburyport.

44-827 O - 75 - 18

- Continue local control of commercial and recreational shellfish digging. Concentration on health aspects and application of management techniques which improve shellfish yields given attainment of water quality objectives.

- Private marinas should be encouraged to provide for 425 new boat spaces, depending on the ability of the harbor to withstand development.

- Communities should provide sufficient land for terminal facilities for commercial navigation including full transport of commodities adequate for the region and for recreational navigation.

- The state DPH should consider revamping its regulations concerning shellfish beds to allow use of treated wastewater for shellfish propagation.

o The Massachusetts Department of Public Works should designate these ponds 20 acres and larger and highly productive for freshwater fishing as "Great Ponds": Hood Pond, Ipswich-Topsfield, Dykes Pond, Gloucester, Haskell Pond, Gloucester.

o The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider obtaining public access rights-of-way and/or acquiring these significant wetlands which are most important for wetlands wildlife production for hunting in towns allowing hunting: Ash Swamp and Beaver Brook in West Newbury; Little River Swamp in Newbury and Newburyport; Upper Gravelly Brook and Pine Swamp in Ipswich; Bachelder Brook in Rowley; Cedar Swamp and Beaverdam Swamp in Essex and Manchester.

o Massachusetts Department of Natural Resources should establish a state scenic rivers system and designate the Ipswich River as an initial component.

LAND USE

The Growth, Development Pressures and Land Use narrative in this basin report includes general land use actions intended for consideration by the regional planning agencies, local planning boards, the state Department of Community Affairs, and the Department of Natural Resources.

- Towns with the assistance of the Soil Conservation Service should develop operational soil maps for Gloucester and Rockport.

- Towns and the Soil Conservation Service should establish local sedimentation and erosion control ordinances.

FLOOD DAMAGE REDUCTION AND WETLAND PROTECTION

o Towns and the state should continue maximum use of non-structural methods to prevent flooding including wetland protection, zoning, and flood insurance.

o Towns should protect coastline through zoning and, where economically feasible, through limited purchase.

- Communities should prevent redevelopment of flood prone coastal areas after storm destruction.

o The Corps of Engineers together with the Commonwealth should construct only where economically feasible seawalls and other protective projects.

CHARACTERISTICS

WATER SUPPLY AND QUALITY

- Manchester, Gloucester, Rockport characterized by rough, rocky terrain and shallow soils.

- Manchester utilizes surface water and groundwater provided by municipal system.

- Gloucester and Rockport have little groundwater; surface water from reservoirs and abandoned quarries will probably continue to be their main source of supply.

- Significant groundwater reservoir areas; Rowley, Ipswich, Essex.

- Essex, Rowley, and Newbury are dependent on groundwater.

- Newburyport and Ipswich must augment groundwater supply with surface water systems; Ipswich obtains some groundwater from Ipswich R. Basin and both surface and groundwater from Bull Brook.

- Newbury, Rowley, and Essex have adequate groundwater supplies up to 1990, but Essex may encounter difficulties with iron removal

- Ipswich will likely have to depend on further augmentation of its water supply through surface water sources by 1990.

- Rowley; probably continue to depend on groundwater and expand its use through 1990

- Manchester discharges secondary treated wastewater into Mass. Bay.

- Gloucester discharges raw sewage into Gloucester harbor.

- Gloucester mainly dependent on on-site sewage systems.

- Rockport, though some on-site disposal, discharges majority of its wastewater, untreated, into Mass. Bay.

- Essex has individual sewage disposal systems.

- Both Newburyport & Ipswich have municipal sewage systems; discharge primary treated effluent to the Merrimack and Ipswich estuaries, respectively.

- Ipswich has waste disposal problems approaching basinwide and perhaps SENE regionwide proportions due to its discharges into Plum Island Sound and Ipswich Bay.

- Water adjacent to Ipswich classed SC, programmed to Class SA for future.

- Essex Bay currently exhibits class SC water, programmed to class SA for future.

- Changes above require significant modifications in future wastewater disposal practices.

- Class SC water in Gloucester and Rockport harbors; must be improved to Class SB due to new federal approved state standards.

- Waste disposal problems in Manchester, Gloucester, and Rockport serious enough to be identified as having basin-wide significance, to Southeastern New England region as a whole.

- Cape Ann group also confronted with soils with inefficient subsurface disposal characteristics. Problem is of basin-wide significance for towns of Manchester and Rockport.

- Ipswich lowland and estuary towns of Newburyport, Newbury, Rowley, and Essex have soils inefficient for subsurface disposal utilizing septic tank system in some areas. Such problems approach basin-wide significance.

WATER RELATED LAND USE

- Characteristics of tidal flooding, shore erosion, and tidal estuaries in coastal towns.

- Numerous biologically productive natural wetlands that have not succumbed to urban development.
- Coast from Gloucester thru Essex, Ipswich, Rowely, Newbury and Newburyport has tidal estuaries important to waterfowl and mammal production.
- Rockport and Manchester have only limited importance to waterfowl and mammal production.
- Moderate riverine flooding of homes in Manchester.
- Little encroachment on small streams that drain Rockport; development in coastal areas exposed to only moderate tidal flooding.
- Numerous mudflats along coast are primary softshell clam areas.
- Newbury, Rowley, Essex, and Gloucester have anadromous fish resources.
- Extensive sandy beaches in Newbury (Plum Island Beach), Ipswich (Crane's Beach), and Gloucester (Wingaersheek Beach), provide public access to swimming.
- Gloucester harbor most important for commercial fishing and recreation.
- Need to offset severe erosion with sandfill along Plum Island Beach (Newbury).
- Expanding Plum Island and Crane's Beaches would increase potential use of beach facilities.
- Stricter controls in estuarine habitats are needed to avert destruction as exemplified by highway and sand and gravel operations in Gloucester and Newbury.
- Offshore partially submerged rock breakwater protects Rockport Harbor from coastal erosion.
- Use of fore-and aft-moorings to increase harbor capacities in Newburyport, Newbury, Essex, and Gloucester.
- Additional marinas in Newbury and Gloucester would provide opportunity for expanding available boat capacities.
- Major recreational boating facilities in Manchester.
- Mass. Port Authority proposal for deepwater offshore terminal near Newburyport.
- Extensive and intensive recreation opportunities could be expanded by acquiring inland portions of Rockport.
- Cedar Swamp and Beaver Dam Swamp in Essex and Manchester are excellent wildlife wetland habitats; could be acquired and managed to meet 1990 hunting and non-hunting demands.
- Anadromous species spawn in lower section of Ipswich River and provide sport fishery.
- Construction of dams has caused decline in anadromous fish (especially alewife) populations.
- Ipswich River given proper management, could support sturgeon, salmon, or alewives.
- Hiking in Willowdale State Forest in Ipswich provides sizeable outdoor recreation facilities.

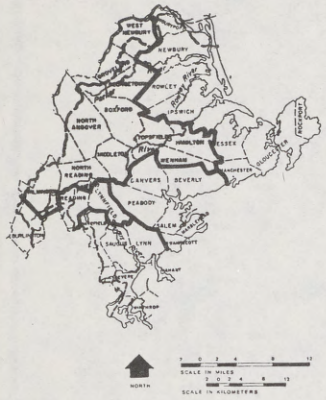
Coastal rural towns have advantage of planning growth around valuable estuarine, harbor, and recreational assets.

LAND USE

- All coastal towns are Forest Towns having less than 1000 people/sq. mile.
- Newburyport has between 50 - 70% residentially zoned areas.
- Newbury has over 50% of land zoned for preservation and open space uses.
- Rockport and Manchester zoned 10 - 25% open space.
- Recent residential or commercial development has occurred rapidly in Manchester, Gloucester, Rockport, Newburyport.
- Sand and gravel opportunities exist in western Rowley.
- Small gas turbine units in Gloucester and Ipswich.
- Towns with greatest growth potential (Manchester, Newburyport, Gloucester, and Rockport) have largest sediment & erosion problems.

1 INLAND

BOXFORD
GEORGETOWN
GROVELAND
HAMILTON
MIDDLETON
NORTH ANDOVER
NORTH READING
TOPSFIELD
WENHAM
WEST NEWBURY
WILMINGTON



IPSWICH· NORTH SHORE PLANNING AREA

ACTIONS

WATER SUPPLY

The ultimate responsibility for the provision of water supply under current state legislation is vested in the municipalities. The following actions are therefore addressed to the specific municipalities or water supply districts. These actions are aimed at changing the current responsibility "of provision of supply" to one of management of the resources as a total system. The Water Resources Commission should take the necessary steps to assure that these actions are implemented as the municipalities request them to do so. The legislature should be strongly encouraged to act quickly and forcefully in providing for the creation of proposed water management districts.

- Construct regional surface water reservoir 30-B in Ipswich to serve Hamilton, Topsfield, No. Reading, Wilmington and Middleton.

- Continue existing groundwater supplied to serve Wenham.

- Construct an inter-connection with Andover to augment existing surface water supplies from the Merrimack River to serve North Andover.

- Develop additional groundwater resources to serve Boxford, Georgetown and Groveland.

WATER QUALITY

The municipality has primary responsibility for planning and management of wastes; these actions are therefore directed to them and to the specifically named sewer districts. The state of Massachusetts has developed, through its division of Water Pollution Control, water quality standards for all water and is developing a continuing planning process which includes the determination of allowable maximum daily loads of pollution to assure high quality waters. The state is considering these actions in its basin plan and in its review of applications for federal grants to municipalities for sewage treatment plants. EPA should consider these actions in the review of the state permit programs.

- Construct regional advanced WWTF with safety measures including nutrient removal with outfall to the Ipswich River in Hamilton to serve Hamilton and Topsfield.

- Continue MDC service to a small portion of Wilmington.

- Expand Greater Lawrence Sewer District to serve No. Andover.

- Construct regional advanced WWTF with discharge to Ipswi ch River in North Reading serving No. Reading, Middleton, Lynnfield and a portion of Wilmington.

- Continue individual subsurface disposal where low density and soil conditions are favorable in Wenham, Boxford, Georgetown and Groveland.

OUTDOOR RECREATION

- The Division of Forest and Parks should expand the Harold Parker State Forest by acquiring 2,510 acres in Middleton , North Andover and possibly along the Ipswich River in addition to the A.B.M. site already being acquired.

- DNR should establish a state scenic reservation and designate the Ipswich River as an initial component.

o The Massachusetts Legislature should amend the Great Pond Act of 1869 (Chapter 384) to permit public access to ponds 10 acres and greater for fishing, including Brackett Pond in Andover and Martin's Brook Pond in Wilmington, North Reading.

o The U.S. Forest Service has proposed that the Department of Natural Resources and State Access Board work out an arrangement with private landowners whereby they would manage wildlife habitat in Groveland, Middleton and Topsfield in exchange for public hunting access.

o The U.S. Fish and Wildlife Service has recommended that: The Commonwealth acquire access rights to Four Mile Pond, Boxford; Gravelly Pond, Hamilton; Middleton Pond, Middleton; Swan Pond, North Reading; Wenham Lake, Beverly-Wenham; thereby assuring 726 acres of ponds for freshwater fishing.

o The Massachusetts Division of Fish and Game should confirm the fishing potential of these streams and should initiate a program of acquiring lineal rights of way within a minimum width of 20 feet: Penn Brook, Parker River, Georgetown; Howlett Brook, Ipswich River, Topsfield; Pye Brook, Howlett Brook, Topsfield; Fish Brook, Ipswich River, Boxford-Topsfield; Boston Brook, Ipswich River, Middleton; Martins Brook, Ipswich River, North Reading; Skug River, Martins Pond, North Reading; Lubber Brook, Ipswich River, Wilmington; Maple Meadow Brook, Ipswich River, Wilmington.

o The Massachusetts Department of Public Works should designate these ponds 20 acres and larger and highly productive for freshwater fishing as "Great Ponds," Stearns Pond, North Andover; Stiles Pond, Boxford; Swan Pond, North Reading; Middleton Pond, Middleton; Longham Reservoir, Wenham.

o The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider acquiring these significant wetlands which are most important for wetlands wildlife production in towns which do not allow hunting: Upper Martens Brook in North Reading.

o The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider obtaining public access rights-of-way and/or acquiring these significant wetlands which are most important for wetlands wildlife production for hunting in towns allowing hunting: Wenham Swamp and Ipswich River Sanctuary in the towns of Hamilton, Topsfield and Wenham; Crane Pond Swamp and the upper Parker River in Groveland, Georgetown, and Boxford; Upper Fish Brook in North Andover and Boxford; Upper Jackman Brook in Georgetown; Spoffords, Baldpate and Crooked Pond in Boxford; Upper Boston Brook in North Andover; Howlett Brook in Topsfield; Upper Penn Brook in Georgetown; Lubber Brook in Wilmington;

LAND USE

The Growth, Development Pressures and Land Use narrative in this basin report includes general land use actions intended for consideration by the regional planning agencies, local planning boards, the state Department of Community Affairs, and the Department of Natural Resources.

- Towns with the assistance of the Soil Conservation Service should develop operational soil maps for Middleton, Hamilton and Georgetown.

- Towns and the Soil Conservation Service should establish local sedimentation and erosion control ordinances.

- Towns should encourage development except in centers, mostly in forested areas through zoning.

FLOOD DAMAGE REDUCTION AND WETLAND PROTECTION

o Towns and the state should continue maximum use of non-structural methods to prevent flooding including wetland protection, zoning, and flood insurance.

o The Corps of Engineers should construct a small diversion project in Wilmington.

CHARACTERISTICS

WATER SUPPLY AND QUALITY

- Wenham, Topsfield, Boxford, Hamilton, **Groveland, Georgetown, Wilmington, & N. Reading depend on ground water supplies.

- Boxford depends entirely on individual wells for water supply.

- Georgetown supplies water for Newbury.

- ** Groveland augments some of its water supply with groundwater from Merrimack River Basin to north.

- Topsfield & Wenham dependent on Ipswich R. for water supply.

- N. Andover hydrologically oriented toward groundwater, also surface water from Merrimack Basin.

- Middleton has dual water system arrangement with Danvers.

- Number of significant potential groundwater sources; large reservoirs in Topsfield and Rowley, and in Hamilton and Wenham in vicinity of Wenham Swamp also in Georgetown, and Middleton.

- **Groveland, Georgetown, Boxford, are in favorable situation with regard to groundwater supply for high and low population projections through 1990.

- Topsfield and Hamilton may not be able to meet needs of high 1990 projection, but both have opportunity for groundwater exploration (eg. Howlett Brook, Mile Brook, Ipswich R. area in Hamilton).

- Hamilton and Wenham: opportunity for utilization of recharge basins adjacent to recharge areas and well fields.

- Groundwater supplied for Middleton may be adequate for the future.

- Reduced streamflow in Ipswich River is caused by groundwater withdrawal & diversion of Ipswich River surface water if latter occurs during summer low flow. This is an important consideration for water management in Ipswich River watershed.

- Diversion of waters of Ipswich watershed to coastal waters lower surface water discharge in Ipswich River.

- Towns having significant groundwater reservoir areas would do well to take precautions to insure future availability of groundwater supplies in terms of both quality and quantity.

- Land use in Georgetown, Topsfield, Hamilton, and Wenham groundwater reservoir areas could be limited for facilities or activities hazardous to groundwater quality.

- Opportunities to apply appropriate zoning to groundwater recharge areas in inland towns.

- Wilmington and N. Reading cannot depend on present groundwater source to meet projected high populations for 1990. May be able to meet demands of projected low population

- Wilmington, upstream, taps groundwater which otherwise would provide streamflow of Ipswich R. downsteam to Reading.

- Withdrawal from Wilmington's reservoirs can severely reduce streamflow available to provide Reading's groundwater.

- Critical water shortage could effect Wilmington in next few years if drought struck area when water resources fully developed.

- Emergency supplies could be imported from Merrimack or Conn. Rivers.

- During drought, Wilmington had advantage over Reading because its wells are upstream from Reading's.

- Problem of low streamflow in Ipswich R. during late summer & early fall due to natural conditions and withdrawal from groundwater reservoirs.

- Pumping of groundwater from reservoirs (above) may be adversely affect streamflow for dilution of wastewater; also may produce negative impacts on aquatic and swamp ecology, navigation, water supply, recreational and aesthetic values.

- Wenham, Topsfield, Boxford, Hamilton, **Groveland, Georgetown, Wilmington, & N. Reading depend on individual sewage disposal.

- N. Andover; major portion of sewer services in form of raw discharges to Merrimack River, but some waste disposal through individual septic tanks.

- Middleton relies on individual subsurface disposal systems.

- Wilmington and N. Reading rely on individual systems to handle sewage.

- Ineffective individual septic tanks, drainage pipes & possibly Wilmington landfill degrade water quality of Ipswich River. Result: depression of dissolved oxygen & increase of coliform counts.

- Dependence on groundwater supply in above towns requires special measures to insure continuance of water quality standards for the basin.

- Middleton has landfill site which had negative impact on water quality of Ipswich River.

- Nearby wells are susceptible to pollution from Ipswich River.

- Wilmington and N. Reading: Ipswich River quality currently Class C, programmed to be Class B for future.

- Middleton has some soils not well suited for efficient subsurface disposal with septic tank systems; problem of basin wide significance.

- Both Wilmington and N. Reading have some soils which exhibit inefficient subsurface disposal characteristics; makes land use control imperative.

WATER RELATED LAND USE

- Headwaters for the Ipswich R. in Wilmington and for Parker R. in **Groveland and Georgetown efficiently controlled flood flows in Parker River Watershed where urban development has consumed very few of numerous small wetlands.
- Wetlands help to restrain potentially damaging flood flows, although damages to floodplain development especially in Wilmington.
- Part of one of three largest natural valley storage complexes in basin occurs in N. Reading.
- Second natural valley storage complex in Topsfield, Hamilton, and Wenham.
- Third complex along upper Fish Brook in N. Andover and Boxford.
- Large natural valley storage areas function as productive wildlife habitats; most important are Wenham Swamp and Ipswich River Santuary in Hamilton, Topsfield and Wenham; Upper Fish Brook in N. Andover and Boxford; Upper Parker R. in **Groveland, Georgetown, and Boxford.
- Smaller, individual wetlands in inland towns also very important for wildlife production, but are overlooked as such and are targets for immediate development.
- Some wetland destruction has occurred due to highway developments in Wilmington, Boxford and Georgetown.
- Such developments (above) have not tarnished section's reputation for important breeding and migrating waterfowl and mammalian habitat.
- Inland rural wetlands such as Upper Boston Brook (N. Andover), Howlett Brook (Topsfield), Upper Penn Brook (Georgetown), and Lupper Brook (Wilmington), are proposed for improvement and management for man's future use.
- Every town includes stretches of high or moderate quality cold water fishing, and except for N. Reading, also includes warm and cold water ponds of high or moderate fishing quality.
- Mainstem Ipswich River has potential for shad.
- Harold Parker State Forest in N. Andover provides only existing publicly owned camping facilities.
- Huntingin Georgetown-Rowley State Forest, and canoeing on Ipswich River in Palmer State Forest provide sizeable out-door recreation facilities.
- Amount of undeveloped forested space and potential for accommodating present and future needs for outdoor recreation (hiking, camping, and canoeing), distinguish inland rural section as vital recreation resource.
- Large and small wetlands present the opportunity to naturally regulate flood flows and to provide productive habitats for wildlife.
- Ipswich River along state hospital grounds in Middleton is excellent wildlife wetland habitat and could be acquired and managed to help meet 1990 hunting and non-hunting demands.

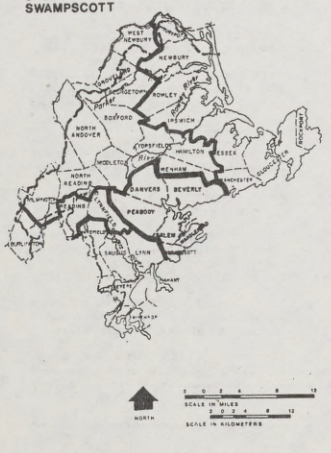
LAND USE

- Boxford has lowest population density in basin.
- **Groveland, N. Andover, and Middleton have been 50 - 75% residentially zoned areas.
- No. Andover zoned 10 - 25% open space.
- Inland area averages over 60% forests.
- Large inland water bodies numerous.
- Recent residential or commercial development has occurred rapidly in Wilmington, N. Andover, and Topsfield.
- Major basin airport in N. Andover.
- Large percentage of land use in transportation in N. Andover.
- Opportunities for sand and gravel production exist in Georgetown, Topsfield, and Boxford.
- Above areas contain estimated reserves of 15 million cubic yards of sand and gravel.
- Sand and gravel reserves (above) appear to be adequate for 1990, but may not be available for exploitation.
- Towns with greatest potential (N. Andover, N. Reading, Wilmington, Topsfield, Hamilton, & Wenham) have largest sedimentation and erosion problems.

** Mass. Coastal Zone Town

1 COASTAL SUBURBAN

BEVERLY
DANVERS
MARBLEHEAD
PEABODY
SALEM
SWAMPSCOTT



IPSWICH-NORTH SHORE PLANNING AREA

ACTIONS

WATER SUPPLY

The ultimate responsibility for the provision of water supply under current state legislation is vested in the municipalities. The following actions are therefore addressed to the specific municipalities or water supply districts. These actions are aimed at changing the current responsibility "of provision of supply" to one of management of the resources as a total system. The Water Resources Commission should take the necessary steps to assure that these actions are implemented as the municipalities request them to do so. The legislature should be strongly encouraged to act quickly and forcefully in providing for the creation of proposed water management districts.

- Acquire additional water supplies from MDC system to serve Marblehead and Swampscott.

- Construct regional surface water reservoir 30 B in Ipswich and flood skim Ipswich River to serve Beverly, Salem, Danvers and Peabody.

WATER QUALITY

The municipality has primary responsibility for planning and management of wastes; these actions are therefore directed to them and to the specifically named sewer districts. The state of Massachusetts has developed, through its division of Water Pollution Control, water quality standards for all water and is developing a continuing planning process which includes the determination of allowable maximum daily loads of pollution to assure high quality waters. The state is considering these actions in its basin plan and in its review of applications for federal grants to municipalities for sewage treatment plants. EPA should consider these actions in the review of the state permit programs.

- Expand secondary WWTF with ocean outfall at Beverly to serve Marblehead, Danvers, Salem, Beverly, Peabody and a portion of Middleton.

- Construct one additional secondary WWTF with ocean outfall at Swampscott.

OUTDOOR RECREATION

- Curran's Beach in Swampscott and West Beach in Beverly should be acquired and opened by the towns for public use by local residents.

- The Division of Forest and Parks should acquire 1,700 acres, including Spring Pond, to create a Salem Highlands Reservation.

o The U.S. Fish and Wildlife Service has recommended that: The Commonwealth acquire access rights to Spring Pond, Peabody; and Spring Pond, Beverly thereby assuring 726 acres of ponds for freshwater fishing.

o The U.S. Forest Service has proposed that the Department of Natural Resources work out an arrangement with private landowners whereby they would manage wildlife habitat in Danvers in exchange for public hunting access.

o The Massachusetts Division of Fish and Game should confirm the fishing potential of these streams and should initiate a program of acquiring lineal rights of way within a minimum width of 20 feet: Salem-Beverly Canal, Ipswich River, Topsfield.

o The Massachusetts Department of Public Works should designate these ponds 20 acres and larger and highly productive for freshwater fishing as "Great Ponds": Putnamville Reservoir, Danvers; Norwood Pond, Beverly; Crystal Pond, Peabody; Elginwood Pond, Peabody; Devils Dishfull Pond, Peabody; Waters River Pond, Danvers-Peabody; Spring Pond, Peabody.

o The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider obtaining public access rights-of-way and/or acquiring these significant wetlands which are most important for wetlands wildlife production for hunting in townsallowing hunting: Cedar Pond in Peabody; Ipswich River along State Hospital grounds in Danvers and Middleton.

COASTAL AND MARINE MANAGEMENT

- Develop major privately financed recreational financed recreational harbor at Collins Cove in Salem.

- Construct major private expansion of boating facilities in Marblehead Harbor, Salem Harbor, Danvers River, Waters River, Porter River, Bass River and Beverly Harbor.

- Continue maintenance of existing commercial and recreational channels by Corps of Engineers in Beverly Harbor, Danvers River, Porter River and Salem Harbor.

- Establish state and local salt water boating advisory committee to help coordinate orderly growth of boating use in Salem, Danvers and Marblehead.

LAND USE

The Growth, Development Pressures and Land Use narrative in this basin report includes general land use actions intended for consideration by the regional planning agencies, local planning boards, the state Department of Community Affairs, and the Department of Natural Resources.

- Construct, prior to 1980, unit no. 5, a 800 MW fossil fuel plant, at Salem Power Plant site.

- Towns and the Soil Conservation Service should establish local sedimentation and erosion control ordinances.

- Towns with the assistance of the Soil Conservation Service should develop operational soil maps for Peabody and Danvers.

FLOOD DAMAGE REDUCTION AND WETLAND PROTECTION

o Towns and the state should continue maximum use of non-structural methods to prevent flooding including wetland protection, zoning, and flood insurance.

o Towns should protect coastline through zoning and, where economically feasible, through limited purchase.

- Communities should prevent redevelopment of flood prone coastal areas after storm destruction.

o The Corps of Engineers together with the Commonwealth should construct only where economically feasible seawalls and other protective projects.

CHARACTERISTICS

WATER SUPPLY AND QUALITY

- Danvers withdraws water from Ipswich R. Valley.
- Peabody obtains surface water and some groundwater from Ipswich R. Basin, only 14% of water supply from MDC.
- Beverly and Salem, as well as Danvers and Middleton, each operate on dual town municipal water supply systems.
- Significant groundwater reservoir areas; Peabody & Danvers, in N. Brook Valley and Goldthwaite Brook Valley, and in Danvers on Ipswich River.
- Danvers, Beverly, Peabody and Salem do not have adequate groundwater prospects.
- Above towns will require additional water supply for higher populations, utilizing surface water supply reservoirs.
- Development has pre-empted all groundwater and surface water sources in Swampscott and Marblehead & Danvers.
- Danvers, Peabody, Beverly, and Salem : all members of So. Essex Sewer District.
- Peabody discharges wastewater from 60% of its population through So. Essex Sewer District into Beverly-Salem Harbor.
- Only Salem and Beverly treat substantial portion of wastewater through So. Essex Sewer District.
- So. Essex Sewer District provides grit and grease removal; discharges effluent to Beverly-Salem Harbor.
- Individual sewage disposal systems provide important means for disposal of wastes; 40% of Peabody population and 39% of Danvers population utilize septic tanks.
- Inter-relationship between Ipswich R. water flow and discharge of waste in coastal zone waters: water in Ipswich watershed diverted to coastal waters.
- Swampscott and Marblehead utilize septic tanks to a minor degree and discharge the rest as raw wastewater to Nahant Bay in individual town systems.
- Groundwater quality problems in Danvers, Beverly, Peabody and Salem are significant.
- Industrial supply in Goldthwaite Brook Valley supplies an important Peabody industry. This groundwater supply has been developed to capacity; deterioration in water quality in this aquifer may have significant economic impact on industry and therefore on Peabody.
- Land use in areas of significant groundwater reservoirs (Peabody & Danvers) could be limited for activities hazardous to groundwater quality.
- Opportunities exist for applying appropriate zoning to groundwater recharge areas where reservoirs present or potential use as water supplies.
- Danvers, Beverly, Peabody, Salem, Swampscott & Marblehead all exhibit local urban runoff problems.
- Severity of waste disposal problem is of basin-wide significance.
- Waters in Salem Harbor, Beverly Harbor, and Danvers R. estuary are class SC, but are programmed as Class SB for future.
- Water quality problems affecting coastal waters: opportunities exist for design and operation of sewer facilities to provide necessary treatment to achieve Class B waters.

WATER RELATED LAND USE

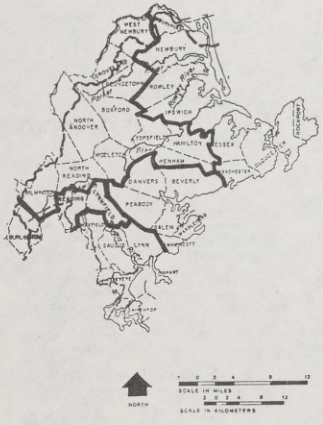
- Salem, Peabody, Danvers, and Beverly have few wetlands, inland or coastal.
- Danvers has limited important wildlife wetlands.
- Peabody and Danvers both have inland drainage into Ipswich R., development in both towns has encroached on small coastal streams discharging into Danvers R.
- Moderate riverine flooding of homes experienced in Beverly, Danvers, Peabody, and Salem.
- Danvers experiencing flooding of commercial properties.
- Marblehead, Swampscott; little encroachment on small streams that drain towns; development in coastal areas exposed to only moderate tidal flooding.
- Major recreational boating facilities in Marblehead (congested), Beverly, and Salem.
- Commercial harbors (petroleum and some fish) in Beverly and Salem
- Curran's Beach in Swampscott and West Beach in Beverly are potential beaches for local public.
- Recreational facilities could be expanded at Danvers and Salem; more marina facilities and fore-and-aft-moorings.
- Opportunity for marina facilities expansion in Beverly, but harbor too exposed for fore-and aft-mooring.
- Chance to alleviate Marblehead Harbor's congestion by breakwater construction, fore-and aft-moorings, and marina expansion.
- Extensive and intensive recreation opportunities could be expanded by acquiring Salem Highlands.

LAND USE

- Salem has between 50 - 75% residentially zoned areas.
- Recent residential or commercial development has occurred rapidly in Peabody, Danvers and Beverly.
- Major basin airport located in Beverly.
- Large railroad yards in Salem.
- Large port and dock facilities in Salem.
- Large percentage of land use in transportation in Beverly, Danvers, and Salem.
- Most pressing local transportation needs appear to be relief from town center congestion, local access to Rt. 128 shopping center, and improved access between adjacent communities.
- Response to needs (above) in coastal suburban towns will result in impacts in water and related land resources.
- There is adequate and dependable power supply for Ipswich-North Shore region.
- One major fossil plant located in Salem Harbor at 800 megawatts as well as small gas-turbine units in Peabody (2) and Marblehead.

1 SUBURBAN

BURLINGTON
LYNNFIELD
READING



IPSWICH-NORTH SHORE PLANNING AREA

ACTIONS

WATER SUPPLY

The ultimate responsibility for the provision of water supply under current state legislation is vested in the municipalities. The following actions are therefore addressed to the specific municipalities or water supply districts. These actions are aimed at changing the current responsibility "of provision of supply" to one of management of the resources as a total system. The Water Resources Commission should take the necessary steps to assure that these actions are implemented as the municipalities request them to do so. The legislature should be strongly encouraged to act quickly and forcefully in providing for the creation of proposed water management districts.

- Construct regional surface water reservoir 30-B in Ipswich to serve Lynnfield and Reading.

WATER QUALITY

The municipality has primary responsibility for planning and management of wastes; these actions are therefore directed to them and to the specifically named sewer districts. The state of Massachusetts has developed, through its division of Water Pollution Control, water quality standards for all water and is developing a continuing planning process which includes the determination of allowable maximum daily loads of pollution to assure high quality waters. The state is considering these actions in its basin plan and in its review of applications for federal grants to municipalities for sewage treatment plants. EPA should consider these actions in the review of the state permit programs.

- Construct regional advanced WWTF including nutrient removal with discharge further upstream to the Ipswich River at No. Reading to serve Lynnfield.

- Expand MDC sewer service to serve Reading.

OUTDOOR RECREATION

o The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider obtaining public access rights-of-way and/or acquiring these significant wetlands which are most important for wetlands wildlife production for hunting in towns allowing hunting: Aberjona River in Woburn.

o The Massachusetts Division of Fish and Game, local governing bodies and/or private organizations should consider acquiring these significant wetlands which are most important for wetlands wildlife production in towns which do not allow hunting: the Saugus River Swamp in Lynnfield and Wakefield; Cedar Swamp and Bear Meadow Brook Swamp in Reading and North Reading; Saugus River and Beaverdam Brook in Lynnfield and Wakefield; Wills Brook Swamp in Lynnfield. Ipswich River east of I-95 in Reading and North Reading.

LAND USE

The Growth, Development Pressures and Land Use narrative in this basin report includes general land use actions intended for consideration by the regional planning agencies, local planning boards, the state Department of Community Affairs, and the Department of Natural Resources.

- Towns and the Soil Conservation Service should establish local sedimentation and erosion control ordinances.

- Towns with the assistance of the Soil Conservation service should develop operational soil maps for Lynnfield and Reading.

FLOOD DAMAGE REDUCTION AND WETLAND PROTECTION

o Towns and the state should continue maximum use of non-structural methods to prevent flooding including wetland protection, zoning, and flood insurance.

CHARACTERISTICS

WATER SUPPLY AND QUALITY

- Reading depends on groundwater supplies from Ipswich R. streamflow infiltrating porous materials.

- Withdrawal from Wilmington's reservoirs can severely reduce streamflow available to infiltrate Reading's groundwater reservoir during summer and early fall low flow periods.

- Critical water shortage could develop in next few years in Reading if drought struck area; emergency supplies from Conn. R. or Merrimack R. might have to be imported.

- Nearly all groundwater withdrawn in Reading is discharged outside Ipswich Basin; thus flow of river below well field is reduced by an amount about equal to groundwater withdrawal.

- Opportunity exists in Reading for utilization of recharge areas adjacent to well fields.

- Lynnfield partially served by MDC water supply.

- Reading relies on septic tanks, but nearly half of its wastewater exported southward from basin to Boston Harbor via MDC.

- Lynnfield dependent solely on on-site sewage disposal.

- Some soils in Lynnfield exhibit inefficient subsurface disposal characteristics.

- Reading exhibits urban runoff characteristics.

- Lynnfield does not exhibit urban runoff characteristics.

WATER RELATED LAND USE

- Wetlands: one of three largest natural valley storage complexes in basin occurs in parts of Reading and Lynnfield.
- Lynnfield has headwater wetlands important both for restraining potential flood flows downstream and for wild life production.
- Reading has streams with high or moderate quality coldwater fishing.
- Lynnfield includes warm water ponds of high and good fishing quality.
- Lynnfield has potential to provide nature study, hiking, and other extensive out door recreation.
- Lynnfield experiences nuisance drainage problems on edges of large wetland areas which have been developed.

LAND USE

- Reading and Lynnfield are serviced by good interstate highway system.
- Good bus service between Boston and Lynnfield.
- Recent residential or commercial development has occurred rapidly in Reading and Lynnfield.

Appendix III

United States Senate,
Committee on the Judiciary,
Subcommittee on Administrative Practice and Procedure,
Washington, D.C., July 25, 1974.

Hon. Rogers C. B. Morton,
Secretary, Department of the Interior,
Washington, D.C.

Dear Mr. Secretary: As you will recall, you and I have exchanged correspondence on a number of occasions concerning the critical decisions facing this nation in the effort to ensure adequate energy supplies, particularly as those choices will affect the future of the Atlantic Continental Shelf and the coastal areas adjacent to that Shelf.

Last month, your Deputy Under Secretary, at a seminar on offshore oil development at the Massachusetts Institute of Technology, addressed himself to the efforts being undertaken by the Department to develop the additional information which will be essential if we are to deal responsibly the complex problems associated with offshore oil development. Yet, according to an article in the Boston Globe (July 24) you have announced that planning for the leasing of offshore drilling sites in the Atlantic could begin as early as next year.

I would like at this time to request more detailed information with regard to the concerns which have been raised, and to receive your comments on what I consider to be vital aspects of any decision with regard to offshore oil development. In all of these areas, I am particularly interested in learning what steps have been taken to ensure full public participation in the Department's consideration of these issues, and to ensure public access to the data on which decisions affecting the OCS will be made.

(1) What steps have been taken by the Department to develop more accurate data on potential oil and gas resources on the Georges Bank, and to make this data available to the public?

(2) When does the Department expect to receive the results of the studies now underway to provide an inventory and analysis of existing environmental and socio-economic data for the North Atlantic area? When will programmatic environmental impact statements for the Atlantic OCS be available? When will environmental impact statements be prepared for specific lease sales in the Georges Bank area?

(3) When do you expect to begin supplemental field studies in the Georges Bank area?

(4) What ecological and monitoring studies are planned for the Georges Bank area, and will such studies be undertaken prior to any leasing of offshore tracts?

(5) What regulations does the Department have under consideration with regard to the filing of data relating to geologic and geophysical data held by private individuals?

(6) What alternatives are under consideration by the Department with regard to the liability of off-shore operators for damage resulting from accidents on the OCS?

(7) What alternatives are under consideration by the Department for compensation of local areas which may be permanently and adversely affected by OCS development, whether or not such development results in acute damage from oil spills or other accidents?

(8) What is the status and what findings have resulted from the Department's analysis of alternative bidding practices?

(9) What alternatives are under consideration by the Department to maximize production, when tracts on the OCS are leased.

Again, because of the volume of additional information which is required in the Georges Bank area, and in view of the consideration being given to revised federal regulations with regard to offshore oil development, I would like to hear from you as to how those requirements can be reconciled with your announcement that leasing in the North Atlantic could begin as early as next year.

Sincerely,

Edward M. Kennedy,
Chairman, Subcommittee on Administrative Practice and Procedure.

U.S. Department of the Interior,
Office of the Secretary,
Washington, D.C., October 7, 1974.

Hon. Edward M. Kennedy,
Chairman, Subcommittee on Administrative Practice and Procedure, U.S. Senate, Washington, D.C.

Dear Senator Kennedy: Thank you for your letter of July 25. It raises some important questions about future development of the North Atlantic Outer Continental Shelf.

The statements you refer to by me and members of my staff are not in conflict. In somewhat different form, these statements dealt with the additional data that will be required before leasing decisions can be made and how we will go about conducting the necessary analyses and studies—including public involvement.

I am convinced that the public should participate in a meaningful way in the Department's decisions concerning development of the oil and gas resources of the Outer Continental Shelf (OCS), particularly in new areas of possible development. Our procedures must assure that the public has access to necessary environmental data relating to those decisions. As you know, in the preparation of the Environment Impact Statements the Department acquires data from various State and local governmental agencies, local universities, and affected interest groups. The drafts of these Impact Statements are subsequently published for review and public hearings are held. As we move to consider oil and gas potential in frontier OCS areas, we have come to recognize that we must alter our normal way of doing business and get representatives of the concerned public involved at an earlier stage, since oil and gas development is not an integral part of the culture of these areas, as it is in the Gulf of Mexico region.

For example, to further increase input into the actual assembly of material and drafting of the Impact Statement for the proposed Southern California OCS sale, the Department has invited several State and local agencies to designate one or more experts to work with the Department's staff: the State Coastal Zone Management Commission; the State Lands Commission; the City of Los Angeles; and Orange County. We also assured the Sierra Club and Seashore Environmental Alliance (a local coalition of environmental groups) that their representatives would be kept fully informed and ffered an opportunity to make expert input at an early phase. Additionally, we are discussing with NOAA how we can increase the participation of fisheries and coastal zone planning experts in our decision-making process.

I believe the approach that is evolving in the California example is the right one, and I intend to take steps to assure similar increased public and expert involvement as the Department examines new OCS areas. While additional outside participation may increase the initial time required for preparation of a draft Impact Statement, the early recognition of legitimate concerns may well reduce the time necessary for a final decision; and it will certainly lead to more broadly accepted decisions.

Several contracts were awarded in June 1973 for a literature search of available environmental and socio-economic data concerning the entire Atlantic Coast, the Gulf of Alaska, and California OCS. This information will soon be available. Thus, we do not think it is unreasonable to believe that the necessary additional data can be assembled, public participation secured, and an Impact Statement prepared between now and late 1975, which is when the first possible sale would be held in either the Atlantic or Alaskan area.

I appreciate your concern that the Department take int› full account the interests and concerns of the local people before making a decision to lease in the Georges Bank area. The public hearing you conducted in Boston on August 5, 1974 regarding possible Georges Bank development helped break new ground in public awareness and involvement in what m ght take place in the North Atlantic. I intend that the Department will follow up on this awareness by increased efforts to involve appropriate local interests in the planning and conduct of future detailed studies. I would expect, however, that development of that area might well follow, rather than precede, development of other Atlantic areas after the Federal/State jurisdictional issues now before the Supreme Court are resolved.

I want to assure you that no decision will be made to lease in the Georges Bank area until an Environmental Impact Statement has been prepared and until there has been an opportunity for public involvement. Due to the complexity and length of the decision-making process for OCS sales, the Department must prepare schedules in order, among other things (1) to submit necessary budget requests to the Congress and (2) as planning tools to provide: (a) for the most

efficient allocation of manpower; (b) for the timing of studies and research, particularly those performed under contract; (c) for public hearings and meetings; (d) for preparation of environmental impact statements and conduct of environmental baseline studies; (e) for acquisition and evaluation of geophysical and geological data for resource evaluation; (f) for timing of *Federal Register* notices; and (g) for such practical matters as reserving auditoriums and other facilities in which public hearings may be held. Thus, the Department has prepared two five-year tentative leasing schedules in the past. We are in the process of preparing a new tentative schedule for possible lease sales in 1975. These schedules do not constitute or represent a decision to lease an area, but are a necessary means of coordinating the efforts of many people. They remain flexible, planning documents until the time that I have all the facts in hand and I make a specific decision to announce a sale.

Attached are answers to the specific questions in your July 25 letter. We will keep you informed of our plans respecting the North Atlantic.

Sincerely,

JOHN C. WHITAKER,
Acting Secretary of the Interior.

Enclosures.

Question 1: What steps have been taken by the Department to develop more accurate data on potential oil and gas resources on the Georges Bank, and to make this data available to the public?

Answer: Coordinated geological and geophysical studies to assess the petroleum potential are being conducted by the Geological Survey, using relevant data from all known sources. The results indicate that sediments favorable for generation of hydrocarbons are considerably thicker than previously thought and that significant petroleum accumulations are possible on Georges Bank. Geologic structures capable of entrapping oil and gas have been located beneath the deeper waters of the shelf. More geological and geophysical data are needed, however, to refine these interpretations.

The sources of data for these studies are the Geological Survey, other Federal and State governmental agencies (Department of Defense, State geological surveys), institutions (research institutions, universities), and industry (published and proprietary data). Rock samples from the seafloor and shallow sub-bottom layers over the northeastern Atlantic OCS, shallow hole core data, logs from the 1967 Caldrill program (a consortium of four oil companies) and the Deep Sea Drilling Program (DSP) and marine geophysical data, which covers the OCS area between Cape Hatteras, North Carolina, and industry's exploratory holes on the OCS off Nova Scotia have been studied. The geophysical data provide the means to extrapolate geologic information from the deep wells on the emerged Coastal Plain of the Mid-Atlantic States and from the Scotian shelf into Georges Bank. Geophysical interpretations over Georges Bank are based upon U.S. Naval Oceanographic Office gravity and magnetic data; U.S. Air Force magnetic data; about 10,000 line miles of 1969–1971 proprietary seismic reflection data, gravity and magnetic data purchased from industry; geophysical data published by research institutions (i.e., Woods Hole Oceanographic Institution, Doherty-Lamont Geological Observatory), and U.S. Geological Survey gravity, magnetic, seismic reflection and seismic refraction surveys.

Specialized research studies are also being conducted. For example, digitally recorded Common Depth Point (CDP) seismic reflection surveys conducted by the U.S. Geological Survey and proprietary data purchased from industry are analyzed for "Bright Spots." "Bright Spot" is a data processing technique recently developed by industry which provides, under favorable rock conditions, a direct indication of the accumulation of gas and, to a lesser degree, oil in the subsurface.

The Geological Survey is planning to acquire additional gravity, magnetic, and CDP seismic data during FY 1975 to permit more detailed analysis of the prospective areas and to provide an independent assessment of industry proprietary data. Also, proprietary data from seismic reflection surveys conducted in 1972 and 1974 will be purchased to provide the closely spaced grid of control needed to determine the fair-market value of prospective acreage.

The U.S. Geological Survey proposed a shallow drilling program (to depths of 1,000 feet or less) on Georges Bank in 1973 to provide more definitive geologic knowledge of the subsurface sedimentary rocks. This program was cancelled, pending the results of the Council of Environmental Quality's study of the impact of petroleum development on the Atlantic and Gulf of Alaska OCS areas. Plans

are now being made in the Department to conduct this program in the near future, under the guidelines outlined in CEQ's report to the President.

Information on potential oil and gas resources on Georges Bank is being made available to the public by means of reports, presentations by Departmental personnel, and discussions with State officials. Within the last 18 months, five reports on the petroleum potential of the northeastern Atlantic OCS area have been published by Geological Survey scientists and are available to the public. Presentations have been made to professional societies and to industrial associations (such as the New England Council). In addition, raw data and the analysis of the Department's surveys over Georges Bank are available.

Question 2: When does the Department expect to receive the results of the studies now underway to provide an inventory and analysis of existing environmental and socio-economic data for the North Atlantic area? When will programmatic environmental impact statements for the Atlantic OCS be available? When will environmental impact statements be prepared for specific lease sales in the Georges Bank area?

Answer: The study to conduct an inventory and analysis of existing environmental and socio-economic data for the North Atlantic area from the Bay of Fundy to Sandy Hook, New Jersey, which is being done by the Research Institute of the Gulf of Maine (TRIGOM) in conjunction with the Public Affairs Research Center, Bowdoin College and the University of Rhode Island, is scheduled to be in final form in October of this year. The Bureau of Land Management (BLM), which awarded the contract, has already reviewed the draft report and the contractor is making necessary revisions. Before the report can be released the final document must be reviewed and approved by the BLM.

A programmatic Environmental Impact Statement on the proposed accelerated leasing program of 10 million acres in 1975 is presently being prepared by the Bureau of Land Management. This programmatic statement will cover the Atlantic OCS as well as the Pacific, Alaskan, and Gulf of Mexico OCS. It is scheduled to be filed with the Council on Environmental Quality in October with public hearings to be held later in the Fall. Enclosed is a press release and *Federal Register* notice announcing the preparation of the programmatic statement.

Individual impact statements for specific lease sales will be prepared for any frontier area following a decision by the Secretary on which frontier areas to proceed on in 1975. No decision has yet been made to prepare an individual impact statement on the Georges Bank area and it seems doubtful that such a decision will be made until after the 10 million acre programmatic statement is completed.

DEPARTMENT OF THE INTERIOR,
OFFICE OF THE SECRETARY,
May 22, 1974.

DEPARTMENT TO PREPARE ENVIRONMENTAL IMPACT STATEMENT ON PROPOSED INCREASE IN OCS OIL AND GAS LEASING

Secretary of the Interior Rogers C. B. Morton said today he has directed the Department's Bureau of Land Management to prepare an environmental impact statement on the program announced by President Nixon to increase oil and gas leasing on the Outer Continental Shelf (OCS) to ten million acres in 1975.

Secretary Morton said the action was being taken to assure that adequate consideration is given to the environmental impact of and the alternatives to the program for accelerated OCS leasing announced by the President in his energy message on January 23, 1974.

OCS areas which may be affected by the proposed program include three Atlantic coast areas, three in the Gulf of Mexico, four on the Pacific coast, and seven on the coast of Alaska. In February, the Bureau of Land Management asked for comments on these areas from the oil and gas industry and the general public as to areas of interest for leasing and of environmental concern. Separate requests for information on these areas were also transmitted to all Federal agencies with interest in the Outer Continental Shelf.

Secretary Morton said that comments received are being studied together with the environmental assessment of the Council on Environmental Quality on potential leasing in frontier areas of the OCS, including the Atlantic coast and the Gulf of Alaska.

"Since the President announced the program for accelerated leasing, officials of the Interior Department have been involved in a continuing dialogue with environmental organizations, representatives of industry and other concerned individuals and groups in an effort to obtain the benefit of their views on the environmental aspects and oil and gas potential of the proposed action," Secretary Morton said.

The environmental impact statement which will be prepared will deal with the management system pertaining to proposed accelerated leasing, including leasing procedures, supervision, inspection, and regulation of lease operations, and monitoring of actual and threatened environmental effects of lease operations; OCS oil and gas resource potential; energy supply and demand; technology for developing oil and gas offshore; environmental settings; natural phenomena that exist in particular OCS regions and which have the potential to cause or contribute to environmental impacts arising from the proposed action; the potential environmental impacts, offshore and onshore; and the alternatives to the proposed action and their environmental impacts.

Secretary Morton emphasized that any future decisions to prepare individual environmental statements for potential lease sales would take into account the status of pending litigation, including *U.S.* v. *Maine, et al* and *U.S.* v. *Florida.*

Notice of the proposed action was published in the *Federal Register* May 20, 1974, which includes a detailed listing of the areas that may be affected by the proposed program. This listing was also included in the Department's announcement and *Federal Register* notice of February 20, 1974, asking for comments on 17 potential OCS oil and gas leasing areas.

Persons wishing to express their views on the preparation of an environmental impact statement for the proposed program and related matters may submit comments to the Director of the Bureau of Land Management, Washington, D.C. 20240. The text of the *Federal Register* notice is attached.

[Federal Register, Vol. 39, No. 98—Monday, May 20, 1974]

DEPARTMENT OF THE INTERIOR

Bureau of Land Management

OUTER CONTINENTAL SHELF; POTENTIAL FUTURE OIL AND GAS LEASING

Preparation of Environmental Imapct Statement

In order to ensure that adequate consideration is given to the environmental impacts of and alternatives to implementation of the program announced by President Nixon for an increase in potential future Outer Continental Shelf (OCS) oil and gas leasing to ten million acres in 1975, the Bureau of Land Management of the Department of the Interior will prepare an environmental impact statement for the proposed action pursuant to the provisions of section 102 (2)(C) of the National Environmental Policy Act (42 U.S.C. 4332(2)(C)), OCS areas which may be affected by the proposed program include the following:

	Approximate location
Atlantic Coast OCS areas:	
1. North Atlantic	Bay of Fundy to Cape Cod north of 40° N. latitude and south of.[1]
2. Mid-Atlantic	Cape Cod to Cape Hatteras between 40° N. to 35° N. latitude.
3. South Atlantic	Cape Hatteras to Key West south of 35° N. latitude.
Gulf of Mexico OCS areas:	
4. East Gulf	East of 88° W. longitude.
5. Central Gulf	Between 88° W. to 93° W. longitude.
6. West Gulf	West of 93° W. longitude to Mexican border.

[1] The line drawn from a point at: 42°19.9′ N. latitude, 67°46.9′ W. longitude, thence to 42°9.3′ N. latitude, 67°40.0′ W. longitude, thence 41°42.4′ N. latitude, 67°28.8′ W. longitude, and ending at 41°15.3′ N. latitude, 66°58.9′ W. longitude.

Pacific OCS areas:

	Approximate location
7. Southern California Borderland	South of 34° N. latitude to Mexican border (except Santa Barbara Channel).
8. Santa Barbara	Santa Barbara Channel.
9. North and Central California	North of 34° N. latitude to California-Oregon border (except Santa Barbara Channel).
10. Washington-Oregon	Between California-Oregon border and Canadian border.
Alaska OCS areas:	
11. Cook Inlet	South of 60° N. latitude.
12. Southern Aleutian Shelf	West of 153° W. longitude.
13. Gulf of Alaska	North of 56° N. latitude, east of 153° W. longitude.
14. Bristol Bay	South of 58° N. latitude, east of 165° W. longitude.
15. Bering Sea Shelf	U.S. Waters south of 66° N. latitude.
16. Beaufort Sea	Between 142° W. and 160° W. longitude
17. Chukchi Sea	U.S. waters north of 66° N. latitude west of 160° W. longitude.

It is the intention of the Bureau of Land Management to prepare an environmental statement which, in general, will describe the following topics: The proposed leasing action; the management system pertaining to the proposed action including leasing procedures, supervision, inspection, and regulation of lease operations, and monitoring of actual and threatened environmental effects of lease operations; OCS oil and gas resource potential; energy supply and demand; technology for developing oil and gas offshore; environmental settings; natural phenomena that exist or occur in particular OCS regions, and which have the potential to cause or contribute to environmental impacts arising from the proposed action; the potential environmental impacts of the proposed action, offshore and onshore, including without limitation matters such as the cumulative impact of oil and gas operations under the proposed leasing action, impacts on competing uses of OCS resources, the effect of the proposed action on the level of environmental study prior to leasing and on the level of supervision of lease operations after leasing, and the degree to which environmental effects might be reduced as a result of improvements in methods of lease supervision; and the alternatives to the proposed action and their potential environmental impacts.

In due course, the Bureau of Land Management will prepare and disseminate a draft environmental statement and solicit comments on the statement from other Federal agencies, State and local governments, and interested members of the public. Moreover, it is the intention of the Bureau of Land Management to schedule public hearings, the location of which will be designated in a future notice published in the FEDERAL REGISTER, to consider the proposed action and the draft environmental statement.

The Bureau of Land Management will prepare individual environmental statements pursuant to section 102(2)(C) of the National Environmental Policy Act, supra, for each potential lease sale involved in the proposed action. This will provide a detailed environmental analysis on a tract-by-tract basis.[2]

The reasoning behind the proposed program and the determination to prepare a formal assessment of the environmental impacts of the proposal to increase OCS oil and gas leasing is as follows:

(a) Energy consumption in the United States will continue to rise. Despite conservation measures which have been instituted as a result of the recent oil embargo, all predictions indicate that there will be further increases in deamnd. Should domestic oil production continue to decline and demand continue to grow as in the past, imports would necessarily increase from 35 percent of U.S. consumption in 1973 to roughly half of U.S. consumption by 1980.

(b) The substantial rise in foreign oil prices in recent months also has created difficulties. If foreign oil purchases are increased, there would be a chronic balance of payments outflow which would create critical problems in international monetary affairs.

---

[2] Decisions to prepare environmental impact statements for potential lease sales would take into account the status of pending litigation, including U.S. v. Maine et al. and U.S. v. Florida.

(c) An increase in domestic oil and gas production offers the greatest chance among available alternatives of avoiding increasing dependence upon potentially insecure foreign supplies of energy. While the mix between energy forms may change somewhat with rapid growth of other forms of energy such as increases in coal production and development of nuclear energy, the U.S. must continue to be heavily dependent on oil and gas through the next two decades.

(d) The Outer Continental Shelf represents a large and promising area for oil and gas exploration. The Department's Geological Survey estimates undiscovered recoverable oil resources offshore totalling 65 to 130 billion barrels of petroleum (7–14 State and 58–116 Federal) and 395 to 790 trillion cubic feet of gas (40–80 State and 355–710 Federal). Production from those resources, in addition to production from known OCS resources, would greatly help in attaining the goal of avoiding dependence on insecure foreign sources of oil and gas.

(e) The proposed action to increase OCS oil and gas leasing to 10 million acres in 1975 is a major Federal action significantly affecting the quality of the human environment.

(f) The environmental statement process articulated in the National Environmental Policy Act provides a formalized method for evaluating the environmental impact of OCS development. For example, the view—that the considerable OCS development which has occurred to date has not resulted in long lasting, unacceptable marine or shoreside environmental or socio-economic impacts—would be evaluated.

The viability of the program, and the bases therefor, will be evaluated in the decision-making processes of which the environmental statement concerning the increases in OCS leasing from approximately 3 million acres in 1974 to 10 million acres in 1975, and the individual environmental statements on the 1975 sales, are a part. Studies and views that will be considered in these decision-making processes include more than the preparation of the environmental statements referred to. The following steps have already been taken:

(a) On April 18, 1973, the President directed the Council on Environmental Quality to study the potential environmental impacts of OCS oil and gas exploration and development along the Atlantic Coast and the Gulf of Alaska. The Report of the Council on Environmental Quality, OCS Oil and Gas—An Environmental Assessment, which was submitted to the President on April 18, 1974, is undergoing a thorough review within the Department.

(b) On February 20, 1974, the Bureau of Land Management published in the FEDERAL REGISTER (39 FR 6541), a "Request for Comments" inviting and encouraging all concerned parties representing the oil and gas industry and the general public to submit information concerning areas of interest for oil and gas resource potential and areas of environmental concern. Comments received to date in response to this request are now being studied and analyzed within the Department of the Interior, and a report will be released in the near future. This is one action taken during the first tier of a new two-tier system for selecting potential OCS leasing areas and individual tracts within those areas. The Bureau of Land Management will use these rankings of areas, and its own evaluations of resource potential and need to protect environmental values, the CEQ report, and views of other Federal agencies to identify areas for potential lease sales. In the second tier of the system, industry and other groups will be asked to provide their views on individual tracts within areas as in the past. Thereafter, an environmental statement for the individual lease sale would be prepared, as mentioned above, and if the sale is determined to be environmentally acceptable, the terms of the leases would be established, and the sale held.

(c) The Department is conducting an inventory and analysis of existing environmental and socio-economic data. The CEQ report represents a significant contribution to this level of effort. Contracts have been entered into with universities for more specific analyses of frontier areas such as the North Atlantic, from the Bay of Fundy to Sandy Hook, New Jersey; the mid-Atlantic, from Sandy Hook to Cape Hatteras; the South Atlantic, from Cape Hatteras to Cape Canaveral; and the Gulf of Alaska, from Cook Inlet to Unimak Island. The Department has also contracted for studies of southern California and is broadening and updating our information concerning the Gulf of Mexico.

(d) The Secretary of the Interior has created a Federal-State Research Advisory Board which will advise on the scope and conduct of baseline studies and monitoring programs for potential leasing in frontier areas of the Atlantic and Alaska. We expect to issue a number of contracts for base-line studies after receiving advice from the advisory board. Representatives of seaboard States have been invited to participate on the Board and others will be so invited.

44–827 O—75——19

In this connection, the Department has decided to proceed in nearly simultaneous time frames with environmental base-line studies on the Outer Continental Shelves of the Atlantic Ocean and the Gulf of Alaska in order to explore further the feasibility of oil and gas leasing in those areas. These base-line studies will consider weather, sea state, biologic populations and natural hazards. Their design will draw upon the National Oceanic and Atmospheric Administration (NOAA), Bureaus in the Department, the States, and the private sector. NOAA and the USGS have been asked to design appropriate studies for the Gulf of Alaska for early consideration by the Advisory Board. Because legal issues may delay OCS development in the Atlantic, the Gulf of Alaska may be the first frontier area in which an OCS sale could be held.

The Gulf of Alaska was identified by the CEQ in its recent report as one of the frontier OCS areas with the greatest environmental risk. The studies to be undertaken are necessary to determine the acceptability of leasing in this area. The Department believes steps should now be taken to protect the option of a sale in that area near the end of 1975 if the difficult environmental and technological problems identified in the CEQ report can be satisfactorily dealt with. The Department has no intention of leasing anywhere on the OCS if it cannot be accomplished in an environmentally acceptable way.

(e) The Department is now evaluating the feasibility of requiring permittees and lessees to furnish the Secretary with copies of all data obtained during offshore exploration and development for oil and gas. Notice of proposed rule making will be published in the FEDERAL REGISTER for public comment soon.

(f) Officials of the Department of the Interior have been involved in a continuing dialogue with environmental organizations, representatives of industry and other concerned individuals in an effort to obtain the benefit of their views relative to the environmental aspects and the oil and gas potential of the proposed action. Discussions have been held on the advisability of an OCS exploratory program that would further help to pinpoint the areas of the greatest potential production of oil and gas. These discussions have involved a number of alternative plans which include: special limited lease sales in frontier areas with a requirement for prompt exploration; leases for exploration only; a Federal exploratory drilling program; and off-structure stratigraphic drilling by both private and public entities.

Persons wishing to express their views concerning the preparation of an environmental impact statement for the proposed program to increase OCS oil and gas leasing and the other undertakings referred to may submit comments to Director, Attention 730, Bureau of Land Management, Washington, D.C. 20240.

GEORGE C. TURCOTT,
Associate Director, Bureau of Land Management.

Approved: May 13, 1974.
JOHN C. WHITAKER,
Under Secretary of the Interior.

[FR Doc. 74–11447 Filed 5–17–74; 8:45 am]

Question 3: When do you expect to begin supplemental field studies in the Georges Bank area?

Question 4: What ecological and monitoring studies are planned for the Georges Bank area, and will such studies be undertaken prior to any leasing of offshore tracts?

Answer: In FY 1975, the Bureau of Land Management is initiating environmental baseline studies in five OCS areas: South Texas; Southern California; the Mid-Atlantic; the Gulf of Alaska; and a continuation of the study initiated in FY 1974 offshore Mississippi-Alabama-Florida. The National Oceanic and Atmospheric Administration in cooperation with the Geological Survey, the Fish and Wildlife Service, and the University of Alaska, has already begun the Gulf of Alaska study. We are also planning in FY 1975 to design similar studies for the Georges Bank area. The results of these studies will be made available to the public as they are completed.

Baseline samples will be gathered in all of these areas prior to any exploratory drilling. The purpose of the studies being initiated is to develop benchmark parameters for biological, geologic and oceanographic conditions in the areas prior to oil and gas development so that later monitoring of these parameters will indicate any significant changes which may take place. Supplemental field studies will be conducted based upon the identification of specific data needs.

In addition, as is noted in answer No. 1, geological and geophsyical data will be collected in the Georges Bank area during FY 1975.

Question 5: What regulations does the Department have under consideration with regard to the filing of data relating to geologic and geophysical data held by private individuals?

Answer: As published in the *Federal Register*, May 16, 1974, the Department of the Interior is considering amending the regulations issued pursuant to the Outer Continental Shelf Lands Act (OCS Act) (43 U.S.C. 1331–1343) to impose new requirements for geological and geophysical exploration under permits and pursuant to leases on the Outer Continental Shelf and for the disclosure of information and data obtained by such exploration. Submission of such data to the Geological Survey and the disclosure of such information to the public would serve the public interest by facilitating conservation of natural resources, encouraging competitive bidding, and assuring the receipt of a fair market value for Federal resources.

A public hearing was held in the Auditorium, Department of Interior, Washington, D.C., on July 15 and 16, 1974. Following the hearing additional written comments were received. The Department is considering all of the comments on the proposed rules in drafting a revised set of regulations. These revised proposed regulations will be published in the *Federal Register* during October.

Question 6: What alternatives are under consideration by the Department with regard to the liability of offshore operators for damage resulting from accidents on the OCS?

Answer: Under current regulations (30 CFR sec. 250.43) lessees are responsible for containment and removal of pollutants that damage or threaten to damage aquatic life, wildlife, and public or private property. In the event that the lessee fails to undertake clean-up operations promptly, Federal, State and private agencies can take control of such operations under either the Regional or National Oil and Hazardous Substances Pollution Contingency Plan. The lessee would then be liable to pay the costs of containment and removal.

The lessee's liability to third parties is now covered by State law rather than by the OCS Lands Act. For example, damaged parties in the Santa Barbara spill (beachfront property owners, sport and commercial fishermen, boat owners, hotel and motel owners, and the State of California) sought (and gained) compensation through the State courts under state tort law. Beachfront property owners received settlements in excess of $4.5 million. The State of California, the City of Santa Barbara, Santa Barbara County and the City of Carpinteria received $4.5 million, $4 million, $0.8 million, and $0.2 million respectively from the oil companies in settlement of their claims. The oil companies paid this in addition to the full costs of cleaning up the spill.

These settlements arising out of the Santa Barbara spill are an example of the manner in which claims for damages suffered by third parties filed under the law of a particular state may be resolved. The Department, in conjunction with CEQ and other concerned agencies, is studying various existing Federal laws and proposed legislation governing liability for oil spills with a view toward arriving at a uniform system that would readily facilitate full recovery by an injured party, e.g., (1) the Act of November 16, 1973 (87 Stat. 576, P.L. 93–153) which includes authority to construct the Trans-Alaska Pipeline (TAPS); (2) the proposed Deepwater Ports bill in the Senate (S. 1751); and (3) the proposed Energy Supply Act of 1974 (S. 3221) to increase the supply of energy in the United States from the OCS; to amend the OCS Lands Act, and for other purposes.

Question 7: What alternatives are under consideration by the Department for compensation of local areas which may be permanently and adversely affected by OCS development, whether or not such development results in acute damage from oil spills or other accidents?

Answer: Damaged parties, in the event of accidents, always have remedy through the tort process, the means to gain compensation for specific injury. However, there may be deleterious effects of OCS development that are not compensable in this fashion. The Coastal Zone Management Act provides a mechanism through which the Federal Government can assist States to devise plans that will minimize any such adverse impacts.

It is not clear from available evidence whether the socio-economic impact on local areas is offset by increased incomes and an enlarged tax base, particularly if appropriate revenue transfers were made within each affected State. In general the Administration has been opposed to direct earmarking of OCS revenues for the coastal states. To justify a division of revenue from the development of nationally owned resources to specific States would require a clearer formulation

of what local damages might exist and a system for directly compensating for those damages.

Question 8: What is the status and what findings have resulted from the Department's analysis of alternative bidding practices?

Answer: The Department has analyzed over the past 8 to 10 months all of the basic alternative bidding practices. However, we do not feel confident that there is any system clearly preferable to sealed-bid cash bonus bidding. While the front money aspect of cash bonus bidding has certain troublesome aspects, bonus bidding does have very positive aspects including the incentive for rapid exploration, the incentive for maximizing recovery, high financial return for the sale of publicly owned resources, and ease of administration. Novertheless, the Department continues to examine other alternatives.

To explore the validity of the front money and risk aversion arguments against competitive cash bonus bidding, a royalty bidding experiment will be held in conjunction with an OCS sale scheduled for October 16, 1974. Ten tracts on 10 inferred structures will be offered with the competition being on the basis of the royalty rate pledged. If the front money and risk aversion arguments hold, heightened competition on the royalty tracts should be observed. In particular, independents and consortia of independents should be willing and able to compete on a head-to-head basis with the majors. Depending upon the results of the royalty bidding, the Department may experiment with some sort of profit share bidding and/or a deferred bonus system in subsequent sales.

Question 9: What alternatives are under consideration by the Department to maximize production, when tracts on the OCS are leased?

Answer: As published in the *Federal Register,* July 5, 1974, the Department is intent on achieving maximum efficient production from OCS wells and reservoirs in those areas currently leased, consistent with good operating practices. This announcement was intended to elicit helpful public comments and proposals on the several items of concern that are specifically enumerated, namely, shut-in wells, lease extensions through production suspensions, maximum efficient producing rates, enhanced recovery through injection processes, unitization, and reduction of royalty rates; and in other regulatory areas where improvements might be made. The Department is using the comments received plus other available information in deciding during the next few months what additional regulations and/or OCS Orders are necessary to maximize OCS production. A summary of the comments received is attached.

SUMMARY OF COMMENTS ON THE FEDERAL REGISTER PUBLICATION, JULY 5, 1974, PROPOSALS FOR MAXIMIZING OCS OIL AND GAS PRODUCTION

PRIVATE CITIZEN

Subsea production systems should be utilized to improve OCS production. Subsea equipment will eliminate the unsightly platform and will not be subject to storm conditions, and may be less expensive in many areas. Reduced royalties could be used to encourage the subsea process in deeper waters.

THE COLUMBIA GAS SYSTEM, INC.

The exploratory effort cannot continue unless new gas is freed from FPC regulation and the financial drain is reduced through modification of the present bonus bidding system.

OFFSHORE OPERATORS COMMITTEE

The suspension of lease production must be tailored to marginal leases, particularly for deeper waters. Exposure of applicant's information should be limited and only with lessee's approval. Carbonate reservoirs should be included under OCS Order No. 4.

Detailed MER's are unnecessary for the numerous small reservoirs in the Gulf. Suggest solution by simply adding MPR's.

Reduction of royalty should be automatic for secondary recovery projects. It should be considered for marginal producing wells and for wells requiring expensive workovers. The application information required by regulation should be reduced.

New rules likely could not improve the number of voluntary units.

Recent adverse actions by Government include: 1) the requirement to pay royalty on flare gas; 2) the provisions against flaring gas; 3) the delays in accepting unit agreements; 4) proposal to shut-in platform during drilling or workover operations.

EXXON

Any change in shut-in well category could lead to premature abandonment of some reservoirs.

Proposal to shut-in platform production during drilling and workover operations could reduce production rates considerably.

Suspensions of production should not be made worse with more restrictions. Retaining the present system is more in line with maximizing recovery.

The MER system is acceptable, as are the provisions for secondary and tertiary recoveries.

Exploratory units should be encouraged and not become a decision in return for concessions, such as the recent automatic termination clause. Mandatory exploratory units will be helpful in frontier areas by conserving rig money and providing additional development time. Production unit rules are acceptable.

The reduction of royalty should be applied to any marginal reservoir condition.

MOBIL

Current OCS regulations on shut-in wells are adequate. A standardization of terminology may be helpful.

For the regulation of suspensions of production, part 2 of OCS Order No. 4 is considered too restrictive.

No change is necessary for MER and enhanced recovery rulings.

The GS should adopt a more resaonable attitude toward units as long as the lease owners are in agreement.

Royalty reduction regulations are acceptable except in conjunction with leases purchased under the royalty bidding system.

Flare gas should be permitted without requiring royalty unless there is negligence involved.

Industry should be more involved with the formulation of new regulations and Orders.

PHILLIPS

The Notice was sufficient in itself in explaining the adequacy of current rules. No changes are recommended except for royalty reductions and unit agreements.

The reduction of royalty ruling is satisfactory except when used with royalty-bid leases.

The GS should encourage both exploratory and production units by giving the operators a simple guide. The form is not that important. We could use the API form.

GULF

Present rules on shut-in wells are suitable. The industry will abandon reserves prematurely if required to reduce shut-ins.

The public will cause delays in handling suspensions of production if the applications are exposed. Since the complaints will be general, there is a question as to what is really gained.

Utilization, whether mandatory or voluntary, is good; however, it is more useful where the ownerships are more varied than on the OCS. The royalty-bid leases could bring about a real participation problem.

AMOCO

Rules for suspensions of production should be relaxed, particularly with movement to deeper waters. Wireline formation tests are not definitive of production as applied under OCS Order No. 4.

There is no need or justification for MER's for the smaller oil reservoirs ($<$10 MM bbls in place) or for gas reservoirs. Data collection requirements and added personnel are not justifiable. The MER should be simply the sum of the MPR's. For the same reason, an annual review of the numerous small reservoirs should not be required. Also, under OCS Order No. 11, the provision to shut-in overproduced wells should be modified if a new MER has been submitted and is acceptable.

Unitization rules are now acceptable. The unitization need will increase with deep waters. The GS spends too much time on handling form details.

Royalty should not be required for tertiary recovery projects due to excessive expenses. Rental should not be required when gas sales are delayed by FPC requirements and pipeline construction.

Flare gas economics provisions under OCS Order No. 11 should be changed to make gas independent of the oil because gas prices are so low.

For deeper waters, OCS Order No. 2 should be changed to allow deeper conductor and surface casing. The technology is inadequate in deep water to comply with setting depths for surface-controlled subsurface safety valves. Also, under OCS Order No. 2, testing requirements on blowout preventors are too severe in deep water when high-pressure preventors are mounted initially and heavy-walled conductor and surface casings necessarily are used.

In strong water-drive reservoirs, bottom-hole pressures should be required only every other year. Wells producing with appreciable water cuts should not be shut-in for bottom-hole pressures. Open flow tests on gas wells should be allowed as a basis for calculating bottom-hole pressures in lieu of running a wireline.

OCS Order No. 8 should not prohibit drilling and workover operations simultaneous with production.

BURMAH

For secondary recovery projects, royalty should be reduced and price controls should be removed.

With deeper waters royalty should be reduced and for all new wells price controls should be removed.

CONTINENTAL

The GS requirement to pay royalty on flare gas is counter productive.

In writing OCS Orders, the GS should give more consideration to costs.

Current rulings on shut-in wells, suspensions of production, and royalty reduction are satisfactory.

SUN

Industry needs incentive through higher prices, a more favorable tax structure, and gas price deregulation.

Information in applications for suspension of production is proprietary and should not be disclosed.

Where surface facilities reduce well production to below the MER, a price increase should be allowed.

A reduction in royalty should be allowed during later producting life of reservoir.

More reservoir units where improved recovery methods are involved could help ultimate recovery. Additional time for developing marginal leases could be procured through unitization. OCS Order No. 11 for unitizing competitive reservoirs should be mandatory. Unit processing time lag probably will preclude efforts to avoid unnecessary drilling.

Reduction of royalty should be applicable for marginal reservoirs, regardless of recovery efforts.

SHELL

There is some concern as to the intent of the Notice. Assume that it will develop regulations to facilitate development rather than restrict.

The shut-in well ruling is acceptable as is except that reasons for shut-in should be shown by category.

The suspension of production regulations are satisfactory. Applications should not be exposed to the public, particularly when near open acreage.

The MER and enhanced recovery rulings are acceptable.

Unitization under OCS Order No. 11 is acceptable, but mandatory unitization for exploration purposes is not acceptable due to equity complexity.

The ruling on reduction of royalty should be preserved, particularly for enhanced recovery projects.

Any changes in regulations should be discussed with industry as openly as with public.

PLACID

Suspensions of production should be granted liberally, particularly for deeper waters. Consideration should be given to increasing the 5-year primary term. Disclosure of applications is acceptable if proprietary information is withheld.

The present OCS Order No. 4, part 2, is overly restrictive. Wireline formation tests should not be considered as accurate. Carbonate reservoirs should be included for suspension purposes.

The MER support for small oil reservoirs (<10 MM bbls) and gas reservoirs should not be a requirement. Extra personnel and expense requirements make the small extra recovery potential unworthy.

Reduction of royalty should be automatic for secondary and tertiary projects, at least until the investment is recovered. It should be applicable on a well which is marginal or when an expensive workover is required. The requirements with the application should be reduced.

Voluntary units are good under present rules, proposed mandatory units will not be good due to lack of flexibility.

Recent Government actions have not been consistent with the Notice intent. Examples are: the requirement to pay royalty on flare gas; the approval requirements to flare gas; the multi-point gas well test requirement; the delays in processing units; and the proposed shut-in of production during drilling or workover activities on the same platform.

PENNZOIL

Shut-in wells could be reduced in number by streamlining gas pipeline certification procedures.

Reductions in royalty should be applied on wells which cannot justify an expensive workover or production facility.

TEXACO, INC.

The support information for suspension applications is proprietary and should not be released.

The records show that voluntary exploratory unitization is working satisfactorily and that mandatory unitization is unnecessary.

Royalty rate reduction for marginal reservoirs is good, but the Government should consider also deregulation of gas prices for marginal conditions.

SUMMARY OF COMMENTS UNDER THE SUBHEADINGS OF THE FR NOTICE, JULY 5, 1974

	Mr. Mason	Columbia Gas	OOC	Exxon	Mobil	Phillips	Gulf	Amoco	Burmah	Conti-nental	Sun	Shell	Placid	Pennzoil	Texaco	Marathon	AGD
Shut-in wells:																	
Standardize reason terminology					X							X					
Reduce FPC certification time													X				
Wells and reasons make public																	X
Suspension of lease production:																	
Deeper waters			X					X					X				
Marginal leases			X					X					X				
Limit application exposure			X				X				X	X	X		X	X	
Increase 5-yr term													X				
Carbonate reservoirs, OCS 4			X										X				
Restrictive, OCS 4 (2)					X								X				
Wireline tests inaccurate, OCS 4 (2)								X					X				
Include economics for proposed P. & A. wells.																	X
Include transportation report for others.																	X
Maximum efficient rate:																	
Small reservoirs exclude			X					X					X				
Gas reservoirs exclude								X					X				
Limit annaul review								X									
Overproduced wells acceptable								X									
Enhanced oil and gas recovery																	
Unitization:																	
Encourage exploratory units				X		X											
Units under order 11 mandatory											X						X
Mandatory frontier exploratory				X													X
Not mandatory frontier exploratory												X	X		X	X	
When owners agree					X												
Simplify form						X											
Royalty bidding complexity							X										
GS too much time			X					X			X						
More where secondary recovery											X						
More where marginal leases											X						
Royalty rate reduction:																	
Secondary and tertiary recovery			X					X	X			X	X	X			
Subsea process	X																
Marginal wells			X										X				
Marginal reservoirs				X							X	X			X		
Not with royalty bidding					X	X											
No rental with FPC delays								X									
Deeper waters									X								
Reduce application requirements			X										X				
Unnecessary with reasonable returns.																X	

SUMMARY OF COMMENTS UNDER THE SUBHEADINGS OF THE FR NOTICE, JULY 5, 1974

	Mr. Mason	Columbia Gas	OOC	Exxon	Mobil	Phillips	Gulf	Amoco	Burmah	Conti-nental	Sun	Shell	Placid	Pennzoil	Texaco	Marathon	AGD
Subsea systems: Rigs unsightly	X																
Oil and gas prices:																	
Gas reregulation		X									X				X		
No controls—secondary recovery									X								
No controls—new wells									X								
Higher for incentive											X						
Better tax structure											X						
Higher for facility-reduced production rates											X						
Reduce costs:																	
Modify bonus bid system		X								X							
More consideration in orders																	
Proposed OCS order No. 8: Not shut-in production while drilling				X				X									
Flare gas: Pay royalty only if negligent					X												
OCS order No. 11:																	
Gas economics stand alone								X									
Less BH pressures with water drive								X									
Not SI high water-cut wells for BHP								X									
Calculate BHP from gas flow tests								X									
Proposed OCS order No. 2:																	
Deeper conductor and surface casings								X									
BOP tests high near surface								X									
OCS order No. 5: Safety valve inadequate for deeper waters								X									
Others:																	
Regulate time from lease sale to production																	X
Criteria list for any departures																	X
Regulate time for exploratory and development plans																	X
List causes for suspensions																	X
Abandonment requests include economics																	X
Flexible rental and minimum royalty rates																	X

MARATHON OIL CO.

Regulations on shut-in wells and suspensions of production are acceptable. With the latter, the application information should not be released.

Mandatory exploratory unitization is unnecessary; essential information to lessen exploratory wells is obtainable through lessee agreements on lease-line wells. Present regulations are already mandatory for reservoir units.

Royalty rate reduction is not needed unless legislation is passed making reasonable returns improbable.

ASSOCIATED GAS DISTRIBUTORS

The wells shut-in and the reasons for shut-in should be made public.

Regulations should require cost and reserve data before abandoning a well which will be submitted as a discovery for suspension purposes. Leases proposed for suspension due to transportation problems should be supported by a transportation report.

Mandatory production and exploratory units are recommended to reduce product costs and to more efficiently utilize drilling rigs.

A reduction in royalty rate for marginal reservoirs should be set with limitations to not allow over 15.0% profit on operating expenses.

The time period from lease sale to continuing production is too long and the regulations should be changed to say that this is wasteful after so many days.

There should be strict criteria listed in the regulations for any departures from Orders.

The regulations should be changed to provide a time limit for the operator to submit the initial exploratory drilling plan and the initial development drilling plan. The latter shall include a satisfactory marketing schedule to reflect timely development.

All acceptable causes for suspensions of production should be listed in the regulations.

Well abandonment requests shall not be approved unless supported by an economics statement showing the costs to continue production and the revenues to make a profit.

Under the regulation on extending leases by drilling or reworking, suggest changing "discovery" to "marketing."

The regulations should include rentals and minimum royalty flexibility so that the rates could be increased to place an economic burden upon the lessee when lease development lags.

APPENDIX IV

Mr. VINCENT E. MCKELVEY,
Director, Geological Survey,
Department of the Interior,
Reston, Va.

DEAR MR. MCKELVEY: As you know, on October 7th the Subcommittee on Administrative Practice and Procedure held a hearing on the proposed leasing of public lands on the Outer Continental Shelf for oil and gas development.

During those hearings, it was suggested that the Subcommittee inquire into the extent of the information available to the Geological Survey with regard to sub-bottom profiles particularly for areas on Georges Bank off the coast of New England.

It is my understanding that the Survey does have such information for the Georges Bank area, and while I realize that the information itself cannot be released under present regulations, the Subcommittee would like to receive from the USGS a computer print out, or a listing, of the specific tracts on Georges Bank for which such data is available to the Geological Survey. The Subcommittee also would like to receive any information you can provide with regard to the budget presently available to the USGS for the collection and analysis of sub-bottom profiles and a listing of the professional personnel presently assigned to this aspect of the Survey's mission.

Thank you very much for your cooperation.

Sincerely,

EDWARD E. KENNEDY,
Chairman, Subcommittee on Administrative Practice and Procedure.

U.S. DEPARTMENT OF THE INTERIOR,
GEOLOGICAL SURVEY,
Reston, Va., November 26, 1974.

Hon. EDWARD M. KENNEDY,
Chairman, Subcommittee on Administrative Practice and Procedure, Committee on Labor and Public Welfare, U.S. Senate, Washington, D.C.

DEAR CHAIRMAN KENNEDY: In your October 21, 1974 letter, you requested information for the Subcommittee's hearings on the proposed leasing of public lands on the Outer Continental Shelf (OCS) for oil and gas development. A representative of the Geological Survey discussed the contents of your letter with a member of your staff in a telephone conversation on November 6, so that we could respond fully to the needs of the Subcommittee. It is our understanding that you want a summary of the amount of deep penetration seismic data used to evaluate the petroleum resource potential of all OCS areas and the budgetary and personnel information related to these programs.

Regional Resource Evaluations are the first process in the development of oil and gas on the OCS. These evaluation programs determine the regional geologic framework and evaluate the petroleum resource potential and environmental conditions of broad areas (e.g., North Atlantic, Bering Sea, Beaumont Sea). These studies proceed through increasingly more detailed and site-specific studies to Tract Evaluation. Tract Evaluation programs consist of detailed subsurface geologic studies, determination of the areal extent of reservoirs underlying unleased and undrilled lands, estimating oil and gas reserves, and determining tract values for competitive lease sales.

Common Depth Point (CDP) seismic reflection surveys provide the primary geophysical data used to evaluate petroleum resource potential of OCW areas The resource evaluation process, however, is more effective when geological information and data from other geophysical methods (shipborne gravity and magnetics, and aeromagnetics) are integrated into the studies.

The CDP seismic data are acquired in a variety of ways. Proprietary data have been acquired by purchase agreements with industry groups since 1968. In FY 1974 and FY 1975, we contracted for exclusive data (i.e., publicly available data) from geophysical companies. The number of line miles of CDP data which have been acquired since 1968, or are now in contract for purchase, is shown on Attachment I.

Since 1962, we have collected and analyzed single channel profile (CSP) seismic reflection data on all OCS areas. In general, the CSP data are of limited value in determining petroleum resource potentials, because reflected energy from the intermediate depth and deeper sedimentary rock layers is not usually discernible. These data have been useful, however, in determining the broad outline of geologic basins in frontier OCS areas and in identifying regional environmental problems. A summary of the number of line miles of CSP data acquired under these programs is shown on Attachment II.

A summary of FY 1975 budget and personnel positions for petroleum resource evaluations of U.S. OCS areas is shown on Attachment III. This table shows the breakdown of expenditures for Regional Resource Evaluation ($10.248 million) and Tract Evaluation ($8.900 million).

A detailed analysis of geophysical surveys underway or planned for FY 1975 Regional Resource Evaluation programs is shown on Attachment IV.

Expenditures in FY 1975 for Tract Evaluation programs will be $6.715 million in Gulf of Mexico and offshore Southern California and $2.185 million in Frontier areas of the Atlantic and Alaskan OCS. A detailed analysis of the quantity and costs of geophysical data which are being purchased for Tract Evaluation programs in selected frontier areas is shown on Attachment V.

The professional man-year commitments to Regional Resource Evaluation and Tract Evaluation programs are 63 and 216, respectively.

Sincerely yours,

V. E. MCKELVEY,
Director.

Attachments.

ATTACHMENT I

DEPARTMENT OF THE INTERIOR, U.S. GEOLOGICAL SURVEY SUMMARY OF COMMON DEPTH POINT SEISMIC REFLECTION DATA, U.S. OUTER CONTINENTAL SHELF AREAS

Area	Line miles	
	Proprietary	Public
1. North Atlantic (Georges Bank Basin)	21,720	400
2. Middle Atlantic (Baltimore Canyon Trough)	9,000	2,400
3. South Atlantic (Southeast Georgia Embayment and Blake Plateau Trough)	5,000	0
4. Eastern Gulf of Mexico (MAFLA)	130,000	0
5. Central Gulf of Mexico		
6. Western Gulf of Mexico (South Texas)		
7. Southern California	11,800	0
8. Santa Barbara Channel		
9. Northern California	0	0
10. Washington-Oregon	0	0
11. Lower Cook Inlet	15,000	0
12. Gulf of Alaska		
13. Aleutian Arc		
14. Bristol Bay Basin	15,000	0
15. Bering Shelf		
16. Chukchi Sea	2,000	0
17. Beaufort Sea		

Attachment II

DEPARTMENT OF THE INTERIOR, U.S. GEOLOGICAL SURVEY SUMMARY OF SINGLE CHANNEL PROFILE SEISMIC REFLECTION DATA, U.S. OUTER CONTINENTAL SHELF AREAS

Area	*Line miles-public data*
1. North Atlantic (Georges Bank Basin)	7,100
2. Middle Atlantic (Baltimore Canyon Trough)	3,000
3. South Atlantic (Southeast Georgia Embayment and Blake Plateau Trough)	3,000
4. Eastern Gulf of Mexico (MAFLA)	[1] 6,000
5. Central Gulf of Mexico	[1] 8,000
6. Western Gulf of Mexico (South Texas)	[1] 9,000
7. Southern California 8. Santa Barbara Channel	8,000
9. Northern California	4,000
10. Washington-Oregon	3,000
11. Lower Cook Inlet	0
12. Gulf of Alaska 13. Aleutian Arc	4,000
14. Bristol Bay Basin	0
15. Bering Sea	12,000
16. Chukchi Sea 17. Beaufort Sea	11,000

[1] Line miles in water depths less than 2,000 meters.

Attachment III

DEPARTMENT OF THE INTERIOR, U.S. GEOLOGICAL SURVEY SUMMARY OF FY 1975 BUDGET FOR PETROLEUM RESOURCE EVALUATIONS OF U.S. OUTER CONTINENTAL SHELF AREAS

Accelerated Leasing Schedule will require greater efforts in environmental protection, resource analysis, and leasing capability.

For FY 1975, the Department of the Interior has allocated to our offshore energy program:

[In millions of dollars]

	Fiscal year 1975		
	Base	Add-on	Total
Regional resource evaluation: Delineate regions or areas where oil and gas are likely to be found (total positions: 63)	7.648	[1] 2.600	10.248
Tract evaluation: Estimate the amount and value of oil and gas reserves on the tracts to be leased (total positions: 60)	8.900	0	8.900
Total		2.600	19.148

[1] Requested but not as yet authorized.

The major thrust of the FY 1975 add-on for GS is to gather resource evaluation information (find out where the oil is and how much is there) in the OCS waters off Alaska—Gulf of Alaska, Chukchi Sea and Beaufort Sea.

ATTACHMENT IV.—DEPARTMENT OF THE INTERIOR, U.S. GEOLOGICAL SURVEY, SUMMARY OF REGIONAL RESOURCE EVALUATION PROGAMS IN FRONTIER OCS AREAS, FISCAL YEAR 1975

Area	CDP seismic	Amount	Magnetic	Amount	Gravity [1]	Bright spot	Amount	Total
Baltimore Canyon	1,400 line miles, 24, channel, 25 x 25.	$400, 000	40,000 line miles [2] aeromag, 5 x 50.	$240, 000	1,400 line miles, 25 x 25.	Selected lines (old and new).	$50, 000	$690, 000
Georges Bank	1,400 line miles, 24 channel, 25 x 25.	400, 000	20,000 line miles [2] aeromag 5 x 50.	120, 000	1,400 line miles, 25 x 25.	Selected lines (old and new).	50, 000	570, 000
South Atlantic (French Coop)	1,800 line miles, 48 channel.	260, 000	1,800 line miles		1,800 line miles			260, 000
South Atlantic	4,000 line miles 48 channel, 25 x 25.	1, 200, 000	40,000 line miles [2] aeormag, 5 x 50.	240, 000	4,000 line miles, 25 x 25.	Selected lines	50, 000	1, 490, 000
Gulf of Alaska (incl. L. Cook Inlet, Kodiak Providence and Aleutians).	1,500 line miles, 48 channel, 25 x 50.	1, 300, 000	50,000 line miles [3] aeromag 5 x 5.	1, 250, 000	1,500 line miles, 25 x 50.	Selected lines	50, 000	2, 600, 000
Bering Shelf (incl. St. George's Basin, Outer Bristol Basin).	3,400 line miles, 24 channel, 25 x 25.	1, 300, 000	200,000 line miles [3] aeromag 10 x 10.	1, 800, 000	3,400 line miles, 25 x 25.			3, 100, 000
Chukchi-Beaufort Seas		4, 860, 000	85,000 line miles [3] aeromag, 10 x 10.	1, 538, 000				1, 538, 000
Total		4, 860, 000		5, 188, 000			200, 000	10, 248, 000

[1] Collected simultaneously with CDP seismic.
[2] Group contract.
[3] Anticipate group contract.

ATTACHMENT V.—DEPARTMENT OF THE INTERIOR, U.S. GEOLOGICAL SURVEY TRACT EVALUATION PROGRAM
QUANTITY AND COSTS OF GEOPHYSICAL DATA IN SELECTED FRONTIER AREAS, FISCAL YEAR 1975 [1]

	Line miles of proprietary data	Costs
Atlantic:		
Georges Bank:		
CDP seismic	[2] 10,300	$130,000
Special processing (bright spot)	0	0
Interpretation (CDP data)	22,000	88,000
High resolution	4,000	130,000
Gravity and magnetic	0	0
Subtotal	36,300	348,000
Baltimore Canyon:		
CDP seismic	9,500	210,000
Special processing (bright spot)	1,000	30,000
Interpretation (CDP data)	12,000	48,000
High resolution	9,000	220,000
Gravity and magnetic	0	0
Subtotal	31,500	508,000
South Georgia Embayment:		
CDP seismic	5,000	74,000
Special processing (bright spot)	0	0
Interpretation (CDP data)	5,000	15,000
High resolution	0	0
Gravity and magnetic	0	0
Subtotal	10,000	89,000
Alaska:		
Bering/Chukchi Seas:		
CDP seismic	[3] 11,000	0
Gravity	[3] 31,500	0
Magnetics	[3] 28,000	0
Single channel seismic	[3] 25,000	1,050,000
High resolution data	3,000	50,000
Subtotal	98,500	1,100,000
Bristol Bay:		
CDP seismic	2,000	140,000
Gravity and magnetics	0	0
Single channel seismic	0	0
High resolution data	0	0
Subtotal	2,000	140,000
Total		1,240,000

[1] Gulf of Mexico and Southern California OCS areas not included.
[2] Includes bright spot and velocity data.
[3] Gravity, magnetics and seismic data are available as integrated surveys in both Bering and Chukchi Seas; therefore, no cost or location breakdown.

SEPTEMBER 25, 1974.

Hon. EDWARD M. KENNEDY,
U.S. Senate, Washington, D.C.

DEAR SENATOR KENNEDY: I appreciate receiving your letter of September 3, 1974, with regard to my statement at the FEA Project Independence hearings in Boston, particularly in reference to the development of oil and gas deposits on the Georges Bank.

As you are aware, we at the Federal Energy Administration are very interested in encouraging development of all our energy resources, including those of the Outer Continental Shelf. The Council on Environmental Quality study to which I referred in my statement does indicate the Georges Bank to be a promising area for oil and gas development. Of course, FEA will not recommend such development until conclusive analyses show the area to be suitable for oil and gas production and without more adverse environmental consequences.

Your letter concerning the development of the Georges Bank, and your opening statement at the Joint Hearing of the Senate Ocean Policy Study and the Subcommittee on Administrative Practice and Procedure, will be made part of the Project Independence hearing record, so that they can be evaluated before our first report is submitted to the President in November.

Sincerely,

JOHN C. SAWHILL,
Administrator, Federal Energy Administration.

○