THE IMPACT OF RAIL COAL SHIPPING RATE INCREASES

HEARING

BEFORE THE

JOINT ECONOMIC COMMITTEE
CONGRESS OF THE UNITED STATES

NINETY-SIXTH CONGRESS

FIRST SESSION

JULY 24, 1979

Printed for the use of the Joint Economic Committee

U.S. GOVERNMENT PRINTING OFFICE
54-244 WASHINGTON : 1979

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(Created pursuant to sec. 5(a) of Public Law 304, 79th Cong.)

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TUESDAY, JULY 24, 1979

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, D.C.

The committee met, pursuant to notice, at 10 a.m., in room 6226, Dirksen Senate Office Building, Hon. Lloyd Bentsen (chairman of the committee) presiding.

Present: Senators Bentsen and McGovern.

Also present: John M. Albertine, executive director; Philip B. McMartin, professional staff member; Mark Borchelt, administrative assistant; and Carol A. Corcoran, minority professional staff member.

OPENING STATEMENT OF SENATOR BENTSEN, CHAIRMAN

Senator BENTSEN. The committee will come to order.

Despite having the world's richest energy resources, the United States now finds itself dangerously dependent on unreliable foreign energy sources. This unhealthy reliance shakes the pillars of our economy and threatens the security of our Nation.

Even though the massive coal reserves of the United States far exceed the combined energy potential of all OPEC countries, our use of this abundant resource has been throttled by environmental policy, transportation policies, things which limit demand and, to a lesser extent, mining and mine safety policies which limit production. The time has come to reassess these policies—to search for ways to encourage rather than discourage coal production.

In today's hearing we will examine the impact of Federal transportation policies on coal utilization. Although all surface transportation modes are used to ship coal, the economics of geography and bulk shipping result in total dependency on rail transport by most electric utilities and large industrial users. In effect, these coal users are captives of the railroads. The coal industry estimates that 85 percent of all coal shipments can be handled only by rail.

The agency responsible for regulating rail rates in this uncompetitive environment, the Interstate Commerce Commission, has recently approved major increases in coal-haul rail rates. In the 6-month period ending last month, San Antonio experienced a 46 percent rate increase which will cost its consumers $17 million a year. Houston Lighting & Power Co. has seen its coal shipping rate increased more than 60 percent above the level recommended by an

ICC study on the cost of service. The utility estimates excessive coal shipping rates will cost nearly $1 billion over the life of its present coal burning plants.

Now those kinds of staggering increases have really sent some tremors throughout the ranks of major coal users. We have now reached the ridiculous situation where it is cheaper for utilities in Texas and Florida to import coal from South Africa and Poland than it is for them to utilize U.S. coal carried by rail.

Of concern to this committee is the effects of these rates on the national goal of coal conversion. President Carter has set an ambitious goal of reducing utility consumption of oil by 50 percent by 1990. He has encouraged other major oil users to make the investments needed to convert existing boilers from oil-fired to coal-fired facilities.

But the ICC policy for setting coal rates will surely work at odds with President Carter's program to reduce our reliance on foreign oil by substantially increasing use of domestic coal. Ever-higher coal shipment rates could stop the President's effort dead in its tracks.

The Department of Energy has predicted that the recent pattern of coal rates will significantly delay the conversion of existing oil- and gas-fired plants and the construction of new coal-fired plants throughout the Southwest.

For example, the Celanese Corp. has recently canceled its plans to convert four of its Texas plants to coal-burning facilities. The Celanese program was halted after only one plant was shifted from gas to coal.

What we are witnessing is a direct conflict between two Federal policies. I was recently up at Camp David, and in talking to the President, members of the Cabinet, those who were there, I pointed out to them that you had two Government departments absolutely at odds. One of them urging higher coal rates, and the other urging lower coal rates for the railroads in hauling that coal.

And it is time for the White House to intervene if we are going to achieve the objectives of energy self-sufficiency in this country.

What we have here is the makings of a policy mess of very serious dimensions. Congress, the administration, the rail, electric utility, and coal industries have to straighten things out before our national energy goals for coal utilization are really thwarted.

Now I want to make it clear that in my judgment the revenue needs of the rail industry are real and they are pressing. But this need cannot be allowed to jeopardize national energy policy goals. The task before us is to bring both energy and rail transportation policy into balance so that the legitimate needs and interests of both sectors will be served to the benefit and not the detriment of the Nation. It is my hope that this hearing will help us to move in this direction.

I will go from this hearing to the Finance Committee where we are working on the windfall profits tax, trying to decide how we are going to utilize these funds.

For the sake of conserving time and to make the hearing as productive as possible, I will ask our witnesses to form three panels.

The first panel will be composed of Mayor Lila Cockrell of San Antonio and Don Jordan, president and chief executive officer of the Houston Lighting & Power Co. The second panel will consist of the

ICC Chairman, Daniel O'Neal, and Lynn R. Colman, General Counsel of the Department of Energy. And the third panel will be composed of Norman Lorentzsen, president and chief executive officer of the Burlington Northern Railroad and Richard Miller, executive vice president of the AMAX Coal Co.

Mayor Cockrell, the very able administrator of the 10th largest city in the United States, we're delighted to have you testify before the committee. You will understand the problems of coal rates, the burden that you have seen imposed on the people of San Antonio through rising utility rates.

Mr. Don Jordan, distinguished chief executive officer of a major utility company in this country. We appreciate the expertise you bring to this hearing. We are pleased to have you both.

Mayor, if you will proceed.

STATEMENT OF HON. LILA COCKRELL, MAYOR, CITY OF SAN ANTONIO, TEX.

Mayor COCKRELL. Thank you, Mr. Chairman.

I am delighted to be here today to testify before the Joint Economic Committee on the problems facing my city and our municipally-owned electric utility in attempting to use coal as an energy source for electric power generation.

It is encouraging to note that this committee recognizes the dilemma which results from two competing administration policies of encouraging the use of coal while at the same time moving toward deregulation of the railroads. As you know, President Carter reemphasized the switch to coal concept again just last week in his energy speech to the Nation.

As mayor, I have served since 1975 as a member of the board of trustees of our electric utility, City Public Service, CPS. I have witnessed first hand the problems and the real distress caused to our citizen consumers by the escalating cost of fuel. The problem began in the winter of 1972 when CPS suffered its first serious curtailments of natural gas.

In 1973, the natural gas supply curtailments increased in both magnitude and duration and were accompanied by rapid price escalation. Gas which cost about 25 cents per million Btu's in 1972 has escalated to over 50 cents per million Btu's by late 1973. CPS moved quickly to provide for alternate fuels for electric power generation. Capabilities for the storage and utilization of fuel oil were greatly expanded. In addition, and most importantly, CPS made the commitment to utilize Western coal in two future 418 megawatt electric generating units to be constructed on an accelerated basis.

I want to point out that City Public Service made the decision to utilize Western coal based on two criteria. One objective was to lessen dependence on oil and gas by switching to an alternate fuel. The other objective was based on economics.

When the decision was made to build these coal burning plants in 1973, the freight rate for hauling coal from Wyoming to San Antonio was $7.90 a ton. The capital costs of the two coal units and related facilities was $250 million, or about 2.5 times the cost of an equivalent oil/gas-fired electric generating unit.

In spite of these higher capital costs, CPS made the commitment to coal in the belief that lower fuel costs over the life of the facility would lead to lower total overall costs. The idea was that these lower total overall costs would help to minimize consumers' bills. Remember, in 1973, every indication was that the price of coal, being a more abundant and less precious fuel, would rise slower than the price of oil and natural gas. This expected lower overall fuel cost for coal was the primary condition that justified the decision to invest in the higher capital cost coal plant.

With the initial rate of $10.93 per ton set by the ICC, these hopes were realized. Average residential customers' electric bills showed a drop due to operation of the coal plant. As the freight rate continued to escalate, however, this cost advantage has been lost. It now costs as much to generate electricity from our coal plant as it does from the gas-fired plant it replaced, and the projections for the future are that the coal costs are now going to exceed that of the competitive gas and oil that it replaced.

I have made frequent attempts to bring our plight to the attention of those people who are in decisionmaking positions, including the President.

In the fall of 1977, the Interstate Commerce Commission granted our coal hauling railroad, Burlington Northern, permission to reopen litigation and request an increase in the transportation charge by almost 50 percent. Our city council passed a resolution on December 29, 1977, asking the Texas Public Utility Commission, the Texas Railroad Commission, and the Department of Energy to assist us in protesting the rate hike.

In March of 1978, I visited Barry Bosworth, Director of the White House Council on Wage and Price Stability, asking for his intervention on the grounds that the rate hikes were an example of the inflationary impact which his council was trying to avoid. I followed up this visit with another series of letters to our congressional delegation and the Governor, asking for support of the city's protest.

In October of 1978 the ICC granted an increase of almost 30 percent to be effective December 1, 1978. When the ICC granted another 5.5 percent rate increase effective December 15, 1978. I sent a telegram to the President calling attention to the contradiction these increases represented to the administration's inflation fight. The response from the White House was disappointing.

In April of this year, Congressman Bob Eckhardt, chairing the House of Representatives' Committee on Oversight and Investigations, held a series of hearings into the problem, at the invitation of Congressman Henry B. Gonzalez. I testified at the hearing in San Antonio, again hoping that the problem would get real scrutiny.

Just this past May, I was invited to testify before the President's Commission on Coal chaired by Governor John Rockefeller of West Virginia. I appeared on Tuesday, May 29, and received what I felt was a sympathetic reception and understanding of our problem. The chairperson of the ICC appeared before the Coal Commission on the following day and was asked some hard questions as a result of my testimony.

Leaving Washington, I felt that at least we were making some real progress. Unbelievably, on Friday of that same week, the ICC

granted another 6.9 percent hike and has since added two more increases of 1.2 percent and 1.4 percent in the past 2 months, alone.

All I can add is, where is it all going to end? With this problem very much on my mind, I attended the U.S. Conference of Mayors' meeting in Pittsburgh in early June. I sponsored a resolution asking that the Nation's mayors accept the problem as a part of their policy program for the coming year.

The Conference agreed and as a result their staff is also at work on the issue. San Antonio is not alone in this situation. There are more than 100 other cities which will be impacted in a similar way if the problem remains unresolved.

I left that meeting, and was a member of a delegation invited to tour cities in the People's Republic of China. I took advantage of the trip to meet with representatives of the Mitsubishi Corp. of Japan. Mitsubishi is part of a consortium which owns and ships Australian coal. At this point, let me be frank. It seems ridiculous to me that there is even a remote possibility that we can better serve our citizens by importing coal from half way around the world than we can by using our own resource.

I am well aware of what that eventuality would do to the balance of payments situation in the Nation. However, we do have an obligation to protect our citizens as best we can from exorbitant and inflationary costs, no matter what the source.

I might add that we are in continuing negotiations with the Mitsubishi Corp. and will be over the next months to determine whether or not that provides a cost-effective alternative.

In San Antonio, we find it ironic that here we are in the forefront of the effort to diversify our fuel base—making major utilization of coal in compliance with national energy goals—and yet having to fight the battle of injurious coal freight rate hikes with little help.

As you may know, San Antonio is not a rich city. Although we are located in the Sun Belt, and we are experiencing new growth, we face many of the problems associated with poverty found in America's older cities. It is doubly distressing that at the same time we are fighting these problems on all fronts, so much of the income which could stay within our economy is totally removed. That amount is approaching $50 million annually.

So we are asking for your help—not just for our San Antonio consumers, but for the national goal of removing obstacles to greater utilization of coal; one of our Nation's most abundant natural resources.

San Antonio has consistently asserted that the coal-hauling freight rate which we pay should be based on the actual costs of hauling our coal. We reject the variety of very novel cost-inflating theories that the railroads have used in an attempt to justify higher coal freight rates. We also reject arguments which attempt to set the market price of coal by comparison with an inflated cartel-based price for oil.

Our attorneys and rate analyst have substantial evidence that our present coal freight rate is producing a disproportionately high rate of return to the railroads. CPS has utilized the economic consulting services of L. E. Peabody & Associates of Landover, Md., along with the expert testimony of George H. Borts of Providence, R.I., in its litigation before the ICC. We would be pleased to make these expert

witnesses available to you should you consider their help to be advantageous.

As a result, the electric customers of San Antonio are virtually subsidizing other, less profitable, rail hauls in different markets. We do not obect to paying our fair share; but we strongly object and protest to paying more than our fair share.

Between 1973 and 1979, the freight rate for hauling coal to San Antonio increased by 133 percent. The comparable increase in the Consumer Price Index [CPI] was 60 percent. Even though the average San Antonio residential electric customer is using only about 1 percent more electricity than he used in 1973, he has seen his electric bill increase by 126 percent. Having made a $250 million investment in the coal plant and its related facilities, it most certainly would be unfair to the citizens of San Antonio if their electric bills continued to rise because of unnecessary and unwarranted increases in the cost of hauling coal.

While the railroads' overall earnings in the past may have been inadequate, more recent pronouncements from the western railroads have shown that substantial contributions to their current income are derived from coal hauling at existing rates.

I might say in summarizing that San Antonio has done what it's been asked to do in advance, in the forefront of the Nation's utilities in moving to coal. We are now in the position where we are faced with disastrous coal freight escalation, which is making our investment prove a real disadvantage economically for our citizens. We feel that this is a terrible situation, we ask your help. Thank you.

Senator BENTSEN. Thank you very much, Mayor Cockrell.

Mr. Jordan, if you will proceed, and we will ask questions at the completion of the panel's statements.

STATEMENT OF DON D. JORDAN, PRESIDENT AND CHIEF EXECUTIVE OFFICER, HOUSTON LIGHTING & POWER CO., HOUSTON, TEX.

Mr. JORDAN. Very good. Thank you, Mr. Chairman.

I am president and chief executive officer of Houston Lighting & Power Co., an investor-owned electric utility serving a 5,600-square-mile area of Texas that includes nearly one-fourth of the State's population. I am appearing today on behalf of my own company and on behalf of the Edison Electric Institute, the principal national association of investor-owned electric utility companies. Member companies of the institute provide 77 percent of all electric power purchased in the United States.

H.L. & P., like many other companies in this country, is attempting to move forward in reducing our traditional use of natural gas boiler fuel by greater use of coal in conformity with our national energy policy. We, like Mayor Cockrell, are running into several problems, not the least of which is transportation, in getting this done.

Because our problems are similar to many others in the State, I would like to relate those to you very briefly. I would, however, state, since I believe Mayor Cockrell has outlined the problem very definitively for you today, it should be on the record in such a way that not only Houston Lighting & Power Co., but also the Edison Electric Institute, supports the statement she made earlier.

Mr. Chairman, at the time Houston Lighting & Power Co. made the election to move to coal, the railroads were offering to transport our coals from Wyoming to Houston, in our cars, for $6.50 per net ton. If this price is then adjusted for increases subsequently authorized by the ICC, it would have risen by the spring of 1978, when we actually started hauling coal, to about $11 per ton. The adequacy of this rate is attested to by several studies made some months prior to that time.

I would call your attention to three specific studies that prove this in our view. First, we had a rate consulting firm of L. E. Peabody & Associates, which found that the costs to supply this service by the railroads, before profit, was $8.61 per ton.

The Office of Technology Assessment, in order to determine the feasibility of coal slurry pipelines, made an individual study and came up with $9 a ton. Finally, the ICC's own study showed the railroads' costs to be $9.59 a ton. As a result of that, we went to the ICC and asked them to set a rate of $11 a ton for Houston Lighting & Power Co., relying upon that initial quoted rate of $6.50 plus the adjustments made by the ICC.

We were a little surprised, however, when they set the rate at $15.60, which is some 60 percent above the figure which they themselves had come to.

Mr. Chairman, our annual coal requirements when we get our fourth coal-fired unit constructed will be approximately 8 million tons per year, which in our judgment will allow the railroad to make an excessive profit of approximately $1 billion. I know you are going to hear testimony that will attempt to refute this and deny that it's there. But I would submit to you that we have seen no numbers at Houston Lighting & Power Co. indicating cost figures that would disprove the studies that have been made or serve as a basis upon which the cost structure requested by the railroads has been based.

We don't believe the citizens of Houston or, for that matter, other portions of this country, should bear a disproportionate share of the cost of keeping the railroads healthy. Now, in our view, the high cost of transportation has in some cases foreclosed the option of moving to coal. We ourselves have just announced two 750-megawatt lignite plants that will be built in Texas, using Texas lignite. Some companies don't have that option because they could not build these units and transmit the power through transmission lines into their service area.

I would like to give you three very quick examples. Central Power & Light Co., located in Corpus Christi, decided in 1973 to build coal-fired plants, one of the first to be built in our State. As they negotiated with the railroads and tried to come to grips with what place to buy their coal, they were initially quoted a rate of about $10 to $10.25 per ton to move the coal to Corpus Christi.

As they moved along in their negotiations for Colorado coal, that rate for the railroads was increased to $19 a ton and caused Central Power & Light Co., to believe that perhaps that was not the best place to buy their coal. They now have made some extensive studies in South Africa to determine what they will be able to buy coal from there. They have, in fact, bought some 40,000 tons which they are moving into Corpus Christi to test burn. It appears to be good coal.

What you are faced with in a situation like this, Mr. Chairman, is that, in spite of the fact that they have a 300-mile rail haul in Africa, a 7,000-mile nautical movement, and another 88 miles from the Port

of Corpus Christi to the location of their plant, and in spite of the fact that you have two additional handling processes when you have to load it from the rail cars onto the ship and from the ship back onto the rail cars, they still believe they can buy that coal at about 20 cents per million Btu cheaper than if they used coal from this country.

The second example I would call your attention to is Tampa Electric Co. In order to meet environmental standards in burning coal, they had to acquire some medium sulfur coal from Tennessee and Kentucky. In order to do that, they shipped some of their coal by water and they had to convert this to rail hauling.

Doing so, they found that the total cost about $31 to $33 per ton delivered in Tampa, only $8 of which happened to be the railroad hauling charge. They looked around at western coal and tried to find a source out in Utah, Montana or some of those areas. They discovered that the cost of coal would be about $20 a ton to move it into Tampa, or move it close enough where they could put it on barges, making the total cost of coal at that time around $40 per ton.

This is an excessive number of dollars which they didn't feel their customers could pay, so they became aware of some coal in Poland. They have contracted for 25 percent of their requirement from Poland. All they have stated is that they clearly do not want to have to rely on excessive amounts of foreign coal, but they do expect to use approximately 25 percent of foreign coal.

I think you pointed out very clearly, Mr. Chairman, in your opening statement, not only utilities are affected by this. Even though utilities burn by far the greatest amount of coal in this country, industrial customers are also faced with the same situation.

I think we will find around the country that, unless we can come to grips with the question of pricing for hauling of coal, you will find many industrial companies who will go the way of Celanese in making the decision that they simply cannot compete in the marketplace if their costs go that much higher.

We recognize, Mr. Chairman, that rate increases for the movement of coal are not uncommon in the 40 to 50 percent range over the last several years. Usually it's imposed by the railroads without supplying data as to their costs to supply that service, as is normally required of other regulated industries in ratemaking proceedings.

We recognize the needs of some railroads to improve their revenue positions. We also recognize that there are some segments of the railroad industry, such as ConRail, which are in such serious trouble as to require congressional attention. However, we also know that there are other railroads which are enjoying unprecedented prosperity, among which are included the western coal-hauling roads.

We believe the hauling charges placed on customers should be based on the hauling service to the individual place that receives the coal.

Mr. Chairman, I would be pleased to answer any questions.

Senator BENTSEN. Thank you very much.

[The prepared statement of Mr. Jordan, together with the statement of the Edison Electric Institute, follows:]

PREPARED STATEMENT OF DON D. JORDAN

My name is Don D. Jordan. I am President and Chief Executive Officer of Houston Lighting & Power Company, an investor-owned electric utility serving a 5,600 square mile area of Texas that includes nearly one fourth of the state's

population. I am appearing today on behalf of my own company and on behalf of the Edison Electric Institute, the principal, national association of investor-owned electric utility companies. Member companies of the Institute provide 71 percent of all electric power purchased in the United States.

HL&P is attempting to move forward in reducing our traditional use of natural gas boiler fuel by greater use of coal in conformity with our national energy policy as reiterated by the President in his energy message to the nation of last week.

However, we are experiencing severe problems as a result of the very high rates for coal traffic being imposed by railroads with the blessing of the Interstate Commerce Commission. Because our problems are typical of those being encountered by other companies engaged in coal conversion programs, I would like to describe them briefly to you.

At the time we were making the important decisions to proceed with our coal conversion program, the railroads were offering to transport our coals from Wyoming to Houston in our cars for $6.50 per net ton. If this price is then adjusted for increases subsequently authorized by the ICC, it would have risen by the spring of 1978, when we actually started hauling coal, to about $11.00 per ton. The adequacy of this rate is attested to by several studies made some months prior to that time.

One study commissioned by our company was made by the rate consulting firm of L. E. Peabody and Associates. That very comprehensive study showed that the railroad's cost to provide the service, before profit, was $8.61 per ton. Coincidentally, another study made by the Office of Technology Assessment to determine the economic viability of coal slurry pipelines found the railroad's cost to be right at $9.00 per ton. And finally the Interstate Commerce Commission's own study of the matter showed the railroad's cost to be $9.59 per ton.

Based on our study and on rates being paid by other shippers for service of the same type, we asked the ICC to set a rate of $11.00 per ton, which we are convinced would allow the railroads an adequate profit. The reasonableness of this rate is confirmed in our view by the fact that this is roughly the same rate which results from applying escalation to the railroad's original quotation of $6.50 per ton up to the time of the cost studies. Nevertheless, the ICC approved an initial tariff of $15.60 per ton, more than 60 percent above the figure their own study had shown to be the railroads' cost of providing its service.

Mr. Chairman, our annual coal requirements, after completion of our last coal-fired unit, will be approximately 8,000,000 tons. It is obvious that the excessive profit allowed the railroads by the ICC, will cost our customers a sum approaching one billion dollars over the life of the plants.

We do not feel that our customers should bear such a disproportionate cost of revitalizing the nation's railroads, especially since they must already bear a disproportionate cost of the national objective of reducing the use of natural gas and oil as boiler fuels. However, in our view the high transportation costs involved in the use of coal have just about foreclosed that option to us, and our future construction plans call for use of either nuclear or lignite fuels.

Other companies are not so fortunate, however, as to have useable lignite deposits within reasonable transmission distances, and have had to turn to other alternatives.

A case in point is Central Power & Light Company, located in our same general region. CP&L with headquarters in Corpus Christi, Texas, decided in 1973 to add one or more coal-fired units to their system, which previously had been almost entirely dependent on natural gas. In 1974, after evaluating a number of possible sources of coal, they began negotiating with a supplier in Colorado and with the originating railroad to achieve the lowest possible delivered cost.

However, from an early "ball-park" estimate by the railroads of from $10.00 to $10.25 per ton for hauling of this coal, the quoted rate rose to almost $19 per ton after the coal supply contract had been executed.

As a result of their experience, CP&L has come to believe that foreign coal may well be the solution to their future coal needs. While they are irrevocably committed to purchase Colorado coal for their first coal unit, they have conducted considerable research on African coal. Indeed, they have already purchased one shipload of this coal—approximately 40,000 tons—for use in testing their new plant and associated coal handling equipment.

Despite the fact that this coal must undergo a 300 mile rail haul in Africa, a 7,000 nautical mile ocean voyage, and a truck haul of 88 miles from the Port of Corpus Christi to the CP&L plant, which involves not only a much longer distance than the Colorado coal but also two additional handling steps, the

delivered cost of the African coal is still estimated to be at least 20 cents per MMBtu less than for the Colorado coal at the coal transportation rates now in effect. This is the reason for Central Power & Light Company's statement that this price offers possibilities of a reasonable delivered cost for deliveries of African coal to that company's next coal-burning unit.

The Tampa Electric Company of Tampa, Florida provides another illustration. As a result of the environmental requirements of the Clean Air Act, TECO began in 1975 the use of a certain medium-low sulfur coal—the Blue Gem seam—found in northern Tennessee and southeastern Kentucky. The geographic location of the Blue Gem reserves precluded the use of inexpensive water transportation to TECO's plants. Motor carrier transportation of the coal was not a viable alternative either due to the distance involved and the large tonnages required

Thus, in TECO's own words, it was and literally is captive to the railroads in movement of this Blue Gem coal to its generating plants. In mid-1975, when TECO began burning this coal, the delivered cost of the lower sulphur Blue Gem coal was approximately $31–33/ton at Tampa, including rail tariffs of approximately $8 per ton. The $8 tariff was approximately 20 percent higher than for water delivery of TECO's then standard coal delivered a greater distance from western Kentucky.

Although TECO considered the use of coal from the western United States, especially from Utah, it concluded that the high cost of its transportation by rail precluded its use as a viable alternative. For example, the rail transportation charges for delivery of coal from the Utah mining areas to a barge loading dock on the Mississippi River approximated over $20/ton. On top of this there was the additional cost for the final water delivery of the coal to Tampa, making the total delivered cost of the coal in the mid-forty dollar range.

In late 1975, TECO became aware of the availability of low sulphur coal from Poland. Investigation indicated that the coal would be suitable for use in TECO's boilers, and it was economically priced—in the $25–$26 price range delivered to Tampa. Although TECO has publicly indicated that it will not become heavily dependent upon foreign coal purchases, it also has stated that it does intend to utilize foreign coal for perhaps as much as 25 percent of its coal requirements for the next few years if it is reasonably certain that such purchases are in the best overall interests of its customers.

Mr. Chairman, utilities are not the only ones affected by these problems. Inordinately high rail tariffs are also impeding industries in shifting from oil and gas boiler fuels to the use of coal. The recent experience of Celanese Chemical Company, Inc. is a case in point. Celanese is the first industrial firm in the greater southwest to undertake replacement, at several of their plants in that region, of natural gas-fired boilers with boilers using coal. In the case of one plant in north Texas, plans call for shipment of high quality western coal by unit train a distance of 707 miles from Colorado to the plant in Pampa, Texas.

Celanese found, however, that once they signed contracts for the coal, and committed the necessary capital to the conversion project, the cooperative attitude previously exhibited by the railroads vanished. Very high hauling rates were quoted by the railroads, as a result of which Celanese approached the ICC in an effort to secure some degree of reasonableness in the rates to be charged. Thereupon, the railroads filed a capital incentive rate which in the words of the management of Celanese was "rubber-stamped by ICC."

Celanese has pointed out the fact that conversions to coal by industrial firms are carried out in a competitive environment. Decisions involving such conversions are therefore extremely sensitive to the high and unpredictable coal hauling tariffs imposed by the railroads and approved by the ICC. Celanese has decided to move forward with conversion of the Pampa plant to coal because of commitments made earlier. However, they have shelved the plans to convert three other Texas Gulf Coast plants bcause to do so would place them at a serious competitive disadvantage. In the words of Celanese, "this situation will greatly impede the efforts of the nation's industries to increase the use of coal as a means of helping extricate ourselves from our excessive and dangerous dependence on foreign oil."

Mr. Chairman, there are a few examples of the problems faced by utilities and large industrial users. We are particularly vulnerable to rising coal tariffs since, for the most part, we are captive not only to a particular mode of convevance, but a particular carrier as well. Rate increases of as much as 40 percent to 50 percent over the last several years are not uncommon, and most usually have been imposed by the railroads without the provision of cost data normally required of other regulated industries in ratemaking procedures.

We recognize the needs of some railroads to improve their revenue positions. We also recognize that there are some segments of the railroad industry—such as Conrail—which are in such serious trouble as to require Congressional attention. However, we also know that there are other railroads which are enjoying unprecedented prosperity among which are included the western coal-hauling roads.

The Congress recognized in the 4R Act that there is traffic over which the railroads enjoy a monopoly. It deregulated rates on all competitive traffic, reserving ICC jurisdiction only in those situations in which the railroads have a monopoly, or enjoy "market dominance".

The Commission has implemented the 4R Act by establishing certain standards which create a presumption that there is market dominance. If the Commission finds market dominance, it retains jurisdiction over the reasonableness of rates. The shipper receives a Commission prescribed rate with no corresponding obligation to ship thereunder. EEI proposes to modify this situation. In order to qualify its shipments as captive traffic, in those cases in which the movement meets the standards of market dominance, the shipper would be required to declare itself a captive shipper with an obligation to commit itself to railroad service for the designated movement so long as the shipper desires to retain the captive designation. If a captive shipper entered into negotiations with a railroad for contract rates, any agreement resulting from such negotiation would not be subject to attack for the length of the contract either by the shipper or by the carrier. If the parties were unable to reach agreement, the Commission would fix a maximum reasonable rate.

EEI also proposes that there be continued regulation by the Commission of maximum reasonable rates for captive traffic. The regulatory burden on the railroad industry can be revised by giving the railroads complete freedom to establish a rate which will cover variable and fixed costs and a rate of return at a level fixed by the Commission on the property used to provide service for the specific movement. This will require identification of the assets used for the captive movement in issue and all other traffic using the specific assets. We would expect the allocation to be made on a pro rata, ton-mile basis.

These are but a few of the recommendations which the Institute would make with respect to modifications to the existing laws covering rail rates. Attached to my statement, for the record, is the Institute's statement on Railroad Deregulation Act of 1979 (S. 796), which describes in greater detail its concerns about captive coal traffic and its suggestions regarding effective but fair ratemaking practices for coal transportation needs.

Mr. Chairman, I would be pleased to answer any questions you or any of the members may have.

Statement of the Edison Electric Institute on S. 796, Railroad Deregulation Act of 1979

SUMMARY OF EEI POSITION

Like the Administration, we recognize the need to restore the financial health of ailing railroad systems; we are dependent on the railroads for delivery of our fuels. Our concern with the proposed Railroad Deregulation Act of 1979 (the "Act") is that it will confer on some railroads the right to use their market power to raise the rates for coal transportation unilaterally and thereby sharply drive up our customers' rates. Moreover, national energy goals will be impeded without necessarily benefiting those railroads which actually need financial assistance.

First, we will explain the "captive" character of utility coal traffic moved by rail—that is, traffic for which rail service is the only economically available method for transporting coal—and our concern with the effect further deregulation will have on the cost of our coal supplies.

Second, we will present the utility industry's recommendations for preserving the minimum necessary rate and service protection for captive utility coal traffic in a manner consistent with additional railroad deregulation.

MISCONCEPTIONS UNDERLYING THE ACT

Our industry is not convinced that further legislation is required to accomplish some of the stated objectives of the Act nor that the acknowledged fact that we have some problem railroads can fairly be ascribed to the ICC. As Chairman

O'Neal has pointed out in several recent speeches, the railroads have not significantly utilized the ratemaking flexibility afforded by the 4–R Act designed to enable them better to compete with other modes of transport. Moreover, the references by Secretary Adams, in introducing the deregulation Act, to tailored rates and services, consolidated routes and joint facilities would suggest that these avenues of self-help are now foreclosed to the railroads—which is not the case. The wide disparity in the financial performance of individual railroads-under the same system of regulation-suggests that the Congress should broaden its inquiry beyond the regulatory scheme to determine whether there are solutions to complex railroad problems that are susceptible of achievement without the necessity of depriving captive shippers of the restraints on monoploy power.

The stated underlying premise of the Act is that transportation competition is present—or would come into being within five years—with respect to all rail traffic.

This is a false premise. Competition has and will occur where technical and economic realities permit it. Competition is not present now—and will not be present in the foreseeable future—with respect to much utility coal traffic.

With the exception of captive rail traffic such as utility coal, which Congress found to be vulnerable to monopolistic practices, the existing 4–R Act would allow railroads to engage in competition of the most extensive sort. In the current regulatory environment, those railroads that are managed efficiently and/or have favorable commodity shipping patterns have thrived. Those like Conrail with non-compensatory traffic or inefficient use of resources have not. Competition under the 4–R Act has not stopped the decline of these railroads because a solution to their problems cannot be achieved until, as appropriate, their productivity is improved, revenue is maximized from competitive traffic and non-compensatory traffic is eliminated but in any event not subsidized by its captive traffic. The railroads have failed to attack these problems adequately with the tools provided by Congress in the 4–R Act.

NEGATIVE IMPACT ON CONSUMERS AND NATIONAL ENERGY GOALS

The Administration's effort to solve the problems of Conrail and a few other lines with a blanket industry solution through the Act has important negative implications for electric utility consumers and the national energy policy.

The increased coal shipping rates the Act could trigger will immediately generate higher prices for electricity for consumers. Coal shipping rates represent over half the delivered price of coal for a number of utilities; fuel prices are roughly 36 percent of electric power revenues.

In addition, the Act could impede coherent development of national energy policy. As the Powerplant and Industrial Fuel Use Act highlights, coal use is the key to reduced dependence on foreign oil. The electric utility industry is the nation's largest coal user. Sharply increased coal freight rates resulting from the Act could adversely affect the national policy to maximize the use of coal.

IMPACT ON CAPTIVE COAL TRAFFIC: THE ROOT OF THE UTILITY INDUSTRY PROBLEM

The Act's effect on "captive" coal traffic is the root of our concern. It is important for the Congress to appreciate: (1) that coal transport is of fundamental importance to utilities' operations; and (2) that many utility coal shippers are captive to railroad service.

Utilities consume 470 million tons or 71 percent of all coal produced domestically today, and it is estimated that they will consume at least 785 million tons of the coal produced in 1985. Today 50 percent of utility coal is moved by rail and the quantity will increase as more coal reserves are developed. In varying degrees, electric utilities use coal to produce electrical energy. Some utility companies produce as much as 80 percent or more of their energy from coal-fired generating plants. For others, it may be only 20 percent.

Much of this coal must be transported hundreds of miles, with some moving as much as 2,000 miles from mine to powerplant. Only a few uttility companies are situated where they have been able to construct mine-mouth generating plants. Where it is economical, utilities may utilize truck transportation for short distances, and barge transportation where rivers and harbors are accessible. Some companies even use conveyor belts for short hauls. Many utilities, however, have coal-fired plants served by only one rail carrier. More than one carrier must participate in a move where the mines in question are located near

one railroad, but the plant is served by another. The important point is that for a substantial number of coal fired plants, rail service is the only method of receiving coal at the plant.

Moreover, utility powerplant boilers are designed to burn coal with a certain range of characteristics, *e.g.* Btu content, ash content, sulfur content, often after long term contracts for acquisition of such coal have been entered into years before the plant comes on line. The location of the plants is dictated by many factors including availability of water, location of load need, and, in many cases, by regulatory requirements. Rail facilities—increasingly frequently carrying utility-owned unit trains to utility-owned facilities—are an integral part of this process. With respect to many utility powerplants, usable alternative sources of fuel are limited. Neither fuel nor site—nor consequent transportation commitment—can be changed without potentially prohibitive economic penalties.

In these situations a rail carrier possesses the attributes of a monopolist. The captive shipper is locked into a railroad; there is no alternative. It is this circumstance in which the electric utility industry fears the potential abuse of monopoly power.

The record shows that some railroads have exploited captive utility shippers of coal, when given the opportunity. Repeated significant increases have been experienced in across-the-board general revenue proceedings and in individual proceedings.[1] However, these rate increases have not necessarily assured good rail service, which in several cases has declined.

It would be a great mistake for Congress to assume that what the Administration terms railroad deregulation is analogous to airline deregulation. In particular, there is no analogy in the airline industry to captive utility shippers of coal. Airlines are not as freight intensive as railroads, nor are their routes as locked in by heavy fixed asset investments. Price shifts in the airline industry can more readily trigger consumer responses. Therefore, Congress should structure rail deregulation plans which are tailored to the requirements of the railroads and shippers who use them.

DEFINING CAPTIVE TRAFFIC

In the 4–R Act, Congress properly decided to free the railroads from regulation where they encountered effective competition. Congress also decided there is some traffic over which the railroads have monopoly power ("market dominance"). As to such traffic economic regulation was preserved because the competitive restraints of the marketplace were lacking. Nothing has changed in this regard since enactment of the 4–R Act.

The ICC has evolved a series of tests for "market dominance" under the 4–R Act. We propose a modified approach to defining captive traffic. The ICC (or other responsible Federal regulatory agency designed by Congress) should be required to promulgate objective standards to define when traffic is captive. These could well be substantially the same tests as have been developed under the 4–R Act but with an additional requirement added. Whenever a shipper believes that a movement of its traffic falls within the scope established by these standards, it could unilaterally declare that movement to be captive, subject to the requirements described below. If the affected carrier disagreed that the traffic fell within the scope of these standards, the ICC would make a final determination of that one issue within a brief period following notice of such disagreement.

A shipper would have two alternatives with respect to a movement thus designated captive. It could seek to negotiate with the rail carrier and establish a contract rate, which would be beyond challenge by the shipper or the carrier. Alternatively, the shipper could elect to have the rate set by the ICC.

A key obligation on the shipper would be attendant on its assumption of captive status: so long as the captive designation were retained, the shipper would be obliged to commit itself to railroad service for the movement in question subject, of course, to force majeure occurrences and service failures by the carrier which prevented such carriage. If better transportation opportunities became available to the shipper, it could unilaterally elect to remove the movement from captive status with appropriate notice and subject to any existing contracts.

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[1] For example, Increased Rate on Coal, Louisville and Nashville Railroad Company, Docket No. 37063—38 percent increase on coal.

RATEMAKING FOR CAPTIVE TRAFFIC

Continued ICC ratemaking powers need only exist in the context of captive traffic. In our view, so long as the rate for captive traffic is greater than variable cost but does not exceed the full cost for the movement of the commodity in question—that is, the rate covers all variable and fixed costs and a fair return on the assets used in the movement—the rate should be considered to be just and reasonable. This concept would reduce the regulatory burden on the railroads by giving them complete freedom to establish such a rate without further justification and without the possibility of investigation and possible suspension by the ICC.

When the rate exceeds such full cost level, the burden on justifying it should fall upon the carrier, which must introduce evidence demonstrating (a) revenue need requirement for equitably imposing an additional burden above full costs on captive traffic; (b) that the contribution of competitive traffic is being maximized; and (c) that no part of the revenue need arises from its handling of non-compensatory traffic.

While the full cost approach to a maximum ratemaking we have proposed is generally equitable, in order to protect electric energy consumers—and other consumers of products of captive shippers—from open-ended increases in carrier rates, the legislation should establish some continuing limitation on the maximum rates which a carrier can be allowed with respect to a captive movement. Otherwise it could be forced to bear an unconscionable burden.

S. 796 fixes as a maximum rate during the transition period (in the proposed new 49 USC § 10701a(6)) a rate yielding a return on the capital used to provide the specific service equal to twice the overall adequate rate of return which a railroad requires. This methodology appears to have merit. We suggest, however, that a formula be adopted as a permanent standard, and we find the 200 percent standard unacceptable.

SERVICE PROTECTION FOR CAPTIVE TRAFFIC

Congress must realize that in the deregulated environment proposed by the Act, capitve traffic will be exposed to possible exploitation from a service as well as a rate standpoint. Reductions in—or simple failure to provide—service could possibly occur in lieu of increases in rates. Clearly, therefore, the Act should preserve the present common carrier obligation or provide railroad service on a fair and equitable basis.

Moreover, it is our view that the legislation should incorporate specific provisions to insure that enhanced railroad revenues are devoted, to the extent necessary, to service improvements. The electric utility industry has herein recognized the necessity for captive traffic, under certain circumstances, to make a greater contribution—within defined limits—to railroad revenues than is made by average non-captive traffic. It is equally important to require that the railroads utilize all additional monies thus made available to improve service, and, that authority be provided to impose reasonable sanctions upon them for failure to do so.

Railroad tariffs at the present time penalize shippers that detract from railroad efficiency, such as demurrage charges for excessive car detentions. Yet railroads vary widely in meeting projected unit train cycle times and other transit times. The Act should properly impose standards of reasonable performance upon the railroads, to be implemented by the appropriate regulatory agency.

Specific protections need to be built into the Act in order to prevent coal hauling by utilities from being adversely affected. We consider the following safeguards to be necessary:

With respect to car service:

Establish standards of reasonable and adequate service, *e.g.* car and locomotive availability, appropriate assembly and destination practices, and a right to petition for improved service;

Authorize tariff penalties on railroads for poor service and incentives for improved handling and use by the railroads of utility owned cars.

With respect to non-discrimination:

Expand the proposed statutory provisions to include service and other matters.

With respect to common carrier obligations:

Preserve common carrier obligations as they exist currently, without the modifications proposed by the Act.

With respect to joint rates:

Require and regulate joint rates, so that shippers cannot be confronted with arbitrary, uncoordinated rates posed by carriers.

Overall, it is clear that captive shippers will have a heightened need in a deregulated environment for the ICC or some other Federal regulatory body to protect their rights for service protection.

FACILITATING MARKET ENTRY

Another means of improving service is facilitating entry into the market for providing tranportation services. We support the provisions proposed in the Act. Board support in the Act for utility exercise of rights of eminent domain to acquire, for example, rail spurs necessary to meet intra or intermodal transportation altenatives would further serve to facilitate maket entry. So too would Administration support for coal slurry pipelines—a position which has not enjoyed DOT's support, because of its solicitious concern for the railroads. At the least, DOT and DOE should be directed to investigate how slurry pipeline development could increase competition and reduce the need for regulation.

CONCLUSIONS

To sum up, the utility industry endorses the Act's proposed deregulations measures for the railroads' competitive traffic. However, the utility industry is not prepared to expose its captive coal traffic to the threat of uninhibited monopolistic rates and service exploitation. Unbridled freedom to raise rates on captive traffic to whatever level is desired by the railroads cannot be viewed as an incentive to improve efficiency, to eliminate noncompetitive traffic or to maximize profit on competitive traffic.

The Administration has emphasized the future capital gap facing the railroads and the value of railroad deregulation in shrinking that gap. While the utility industry supports closure of the gap, we feel that such closure should not be effected by requiring captive military coal traffic to pay unconscionable rates. The gap is better closed by encouraging, through appropriate ratemaking techniques and service protection provisions, the maximization of return on competitive traffic and improved efficiency, including, where necessary, railroad reduction in redundant or obsolete assets. This is the course which must be followed if the adverse effects on the nation's consumers and energy policies which the Act could cause are to be avoided.

Senator BENTSEN. I share the frustration you have expressed about the railroads and some of the financial problems they are having. But trying to achieve some kind of balance to achieve increased utilization of coal and more energy independence is also a very major concern and objective.

But I don't see where you get energy independence if you start hauling coal in from Africa and some of these other areas. Yet I can understand the economics of it. We have had a lot of inflation since 1969 in this country.

We have a chart up here that shows that. This is what is happening to the railroad freight rates on coal since 1969. If you took this index here as 100, by 1979 we see it at 228 percent of what it previously was. If we take the GNP deflator for that same period of time, it's 175 percent. If we take the CPI index, it's 177 percent.

So we see that freight rates on coal have gone up substantially more than inflation has during that same period of time. One might wonder why we're having a hearing here in the Joint Economic Committee. We are not a committee that initiates legislation. But it's our responsibility to look at the long-term effects on the country of major policy decisions.

And it's interesting to me—Senator McGovern, I think you will be interested—at the Camp David meetings, how often the annual report of the Joint Economic Committee was referred to and how many copies

of the annual report were there, and being used as references by Cabinet members and by White House staff and by Members of the Congress.

And the evidence that is brought forth from this hearing and the studies that will result will be used by this committee and, in turn, used by other legislative committees on which to base some of their decisions. I for one will be taking it to the Finance Committee to discuss our concerns there in what we do with our tax structure.

Now, as I understand the comments that we have heard so far, the Department of Energy now is concerned that the cost of delivered coal has reached such a point in the Southwest that additional conversion of electric utility plants to coal and construction of new coal-fired plants will be delayed, and some of them perhaps will be negated completely.

Would you care to comment on that, either of you?

Mayor COCKRELL. Yes, sir. I feel that certainly I have no right to speak for the Department of Energy. But it's our understanding that in their efforts to urge diversification to coal, they recognize the impact of the experience of cities such as San Antonio or Houston, because frankly, news of this kind gets around, and other mayors of municipalities learned of the problems that are being experienced. And it certainly gives them cause to be concerned and to delay conversion.

Certainly within Texas it's well known what problems are being experienced by those of us who have converted to coal. And this certainly is not going to be an incentive to other utilities or cities to convert to coal.

Senator BENTSEN. Well, as the chief executives of a major utility in the country, Mr. Jordan, what comment would you make?

Mr. JORDAN. Mr. Chairman, the cost of coal-fired plants is very great as compared to those imbedded investments we have in the Southwest now using natural gas as a medium. You simply cannot convert those burners when you convert from gas to coal. You have to build a new coal-fired plant.

What we are trying to do down there is to build all of our new equipment as coal-fired units, to operate at least for peak purposes, on those existing units. Now, the speed at which you can convert existing units to coal or to phase out existing units and start operating on coal depends in part on what the cost to do that is.

The gas-fired units, built in place and ready to operate, cost about $100 per kilowatt to build. Today when you build a new coal-fired plant, you are looking at a capital investment of about $700 a kilowatt to build that coal-fired unit.

As a matter of fact, we have an estimate for our 1983 unit that would be right at $700.

Senator BENTSEN. Mr. Jordan, you know, I got quite involved in the energy bill in 1977, again in 1978, and certainly now with what is transpiring before the Senate Finance Committee. A lot of people have some ideas about utility rates in the Southwest because we have gas and we have our oil. They think that they are so much cheaper than the rest of the country.

But if I recall the testimony, the rates in Houston and Boston per kilowatt are pretty close, almost identical.

Mr. JORDAN. Any advantage we had in Houston or San Antonio at one time is very rapidly disappearing.

Senator BENTSEN. I think you can use the past tense.

Mr. JORDAN. Yes, that's true. They have rapidly disappeared. In our own particular case as I look ahead to 1985, our cost per kilowatt hour compared to 1978 will almost double again.

Senator BENTSEN. Regarding what you are telling me, about $700 per kilowatt, what is that measurement?

Mr. JORDAN. Per kilowatt of capacity.

Senator BENTSEN. I guess that is what you are telling me. They can't help but go up substantially more.

Mr. JORDAN. That is absolutely true. If the cost of the hauling of coal or the cost of any fuel that you burn in those specific plants cannot be based upon the actual cost of services you are receiving from it, it places a tremendous burden on the customers of that area and will in fact slow development of that activity.

Senator BENTSEN. Let me ask you this then. I think everybody's acknowledging that the railroads have financial problems and concerns. But it appears to me that they are doing a lot of subsidizing of some of their other traffic by jacking up the price of hauling coal. You have this cross-subsidizing taking place.

If that was eliminated and all traffic stood on its own, do you think that would take care of much of the problem?

Mr. JORDAN. It would certainly take care of some of the problem. We are still going to be faced with those same capital costs. But it simply is a situation where in the utility business or any other, we believe that the cost based on the pricing of the hauling of coal should be based on the cost of the service.

I will say to you again that as much as we have tried to get those numbers, we have never had them made available to us.

Mayor COCKRELL. Mr. Chairman, may I just add a comment?

Senator BENTSEN. Yes.

Mayor COCKRELL. We were interested in San Antonio to learn that in the second quarter, Burlington's profits earnings rose 86 percent over the same period in 1978. We have also been interested to learn that 2 days after announcing its record Burlington Northern announced it's entering a $15 million oil and gas venture in Texas and other southern belt cities, with Burlington providing the capital.

I have also been interested to learn that Burlington Northern owns one-fifth of the world's known reserves of low sulphur coal. Now I think these are all interesting facts, and to me they bear out that the present rates that we are paying are excessive, and it looks to us as if the profits on our coal hauls are being used to put Burlington Northern in the oil and gas business.

Senator BENTSEN. I see my time has expired.

Senator McGovern.

Senator MCGOVERN. Mr. Chairman, first of all I want to express my appreciation to you for scheduling these hearings, because I quite agree with your description of the mission of this committee, which is to look at some of these larger economic problems. And also to look at the relationships between them.

I think we could all agree that the recommendation of the Department of Energy that we move to a greater reliance on coal at a time when there is a heavy strain on finite supplies of oil and gas is good public policy.

And second, the concern some of us had expressed about building up the Nation's rail system is also a desirable public policy. And those two objectives can reinforce each other.

I was impressed listening to Mayor Cockrell's testimony and Mr. Jordan's testimony, though, that that also creates a third problem. And that is the question of how that rate structure can be set so that you are fair to the consumers on the other end, so that this whole process could go forward. It's not going to do any good to talk about converting to coal if it turns out that that is a higher cost source of energy than other alternatives that are available.

I'm wondering if you have any evidence that the rail companies in setting these new rates on coal following the passage of the Regulatory Reform Act of 1976 in which they were given a freer hand in setting rates, if there has been a tendency not only to try to cover their costs of operation, but to recover some of the past losses that they may have suffered in the movement of coal and other commodities.

Mr. JORDAN. I was listening to some testimony yesterday, Senator, over in the House, where a hearing on the coal slurry pipeline was taking place. And I don't think there is any question about the fact that the rate is designed such that the coal-hauling portion is by design, higher than what they believe their cost to service is, in order to make up for some competitive business which they feel they have to serve at a lower rate than perhaps what it actually costs them to serve that business.

I heard the testimony from the railroads yesterday themselves. I don't think they even deny that that is the way the rate is set up. It's set up to make more money off hauling coal than other products in order to subsidize the handling of those other products because they are in a more competitive business there.

We contend that we are a captive customer from the standpoint of hauling coal. You just can't move it from the West, your State, and some of those areas out there, any other way. There is no water transportation available. You can't move it by truck. It has to come by rail.

And therefore, we believe that it's only proper to set that kind of specialized business on the cost to serve the customer who receives it in the long run, and not to supplement rates designed to serve some other segment of the economy.

Senator MCGOVERN. Is it your impression that a few years ago maybe the rates were too low in terms of what the railroads were entitled to in the movement of coal? That has been a contention of the rail industry people, that the rates were artificially low prior to 1976.

And that what we're witnessing now is not simply an effort to recover losses on other commodities, but to recover some of these previous losses that the lines suffered in the movement of coal before the new rate structure was set.

Mayor COCKRELL. May I respond to the Senator?

Senator MCGOVERN. Mayor Cockrell.

Mayor COCKRELL. Senator McGovern, when San Antonio first made the decision to go to coal-fired plants, we asked Burlington Northern for a quotation on the coal and they quoted us $7.90. Now that was not our price. That was what they quoted as what they estimated would be necessary to haul.

In addition, I might say that San Antonio went the second mile, in that we bought over 800 coal cars. And not only do we furnish our own coal cars for the haul, we also do all the servicing on those cars.

And yet from that initial quote, our rate is now up to over $18 a ton. Now frankly, our crystal ball didn't show anything like that kind of an escalation as even being in the cards. We just don't understand it.

Senator McGovern. I was astounded, as I think the chairman was, to find that it's possible to move coal all the way from South Africa or Poland to Texas on a competitive basis. I'm curious how that is possible. You have still got to pay the shipping rates.

Is it because it's so low at the mine head that it offsets those shipping costs? Surely it must cost more in terms of the actual shipping involved to bring coal from South Africa or Poland than it does from the Western States. Maybe you have some figures on that.

Mayor Cockrell. Let me say that in terms of the price of coal, we have no complaint with what we're being charged for the coal. It has been stable in the vicinity of about $7.50 a ton. But when you talk about $7.50 a ton coal and then you add on $18 and perhaps 50 cents for hauling, you get a combined rate that is quite a substantial rate.

Now what we're saying is that the freight rate on the water haul is definitely competitive with what the railroad freight rate is.

Senator McGovern. Even though it has to come clear from Europe or South Africa?

Mayor Cockrell. Yes, sir.

Mr. Jordan. That's correct in our case, too, Senator. Over 75 percent of our total cost of delivered coal is in the transportation of that coal. So that is what is going to make it turn. The way the rates are now set, you are simply going to have to find fuel where the transportation cost is as low as possible because you are not going to make the difference up in the price of fuel. It's in transportation.

Senator McGovern. I think you have both made a very interesting and important case here this morning. I'm anxious to hear what some of the other witnesses have to say about it. You have identified the problem. I think we're all concerned about it. Your testimony has been most effective.

Senator Bentsen. Thank you, Senator.

Once again, thank you very much for your testimony. It will be certainly very helpful in establishing the record in the case.

Our next two panelists will be Mr. A. Daniel O'Neal, Chairman of the Interstate Commerce Commission, and Mr. Lynn R. Coleman, General Counsel, Department of Energy.

Well, Mr. O'Neal, what do you have to say for yourself?

STATEMENT OF HON. A. DANIEL O'NEAL, CHAIRMAN, INTERSTATE COMMERCE COMMISSION, ACCOMPANIED BY JANICE M. ROSENAK, DEPUTY DIRECTOR, SECTION OF RATES

Mr. O'Neal. Well, I'm happy I'm here and happy to have the opportunity to say something for ourselves on this issue. It is an important issue and as has been indicated here, it's a question of balancing different interests and different policies as well.

With me is Janice Rosenak, head of our section of rates. If we get into some technical questions, she may be able to help out. We do have

a prepared statement I would like to submit for the record. I will just go through a short statement.

Senator BENTSEN. It will be placed in the record in its entirety. If each of the witnesses will limit their statement to 10 minutes, we will put the prepared statement in the record.

Mr. O'NEAL. The most recent congressional mandate on which the ICC relies is the Rail Revitalization Regulatory Reform Act of 1976, which we call the 4–R act. That law gives the Commission jurisdiction over rail rates when competition is not sufficient to protect those who use rail service. It also requires the Commission to consider the need of the railroads for additional revenue.

The railroads and shippers, of course, have different ideas as to where the balance between the various needs should be struck. In the case of coal where, especially in the West, the rails have market power, there is also a split in the executive branch on what ought to be the position of the Government.

The Department of Transportation recommends that the upper limit on coal rates should be—and I quote:

> The level at which the delivered price of coal per unit of energy will equal the delivered price of other fuels per unit of energy. Imported oil, natural gas, nuclear power, coal from other sources hauled by other carriers would be examples of competitive sources.

We do have a chart. that is submitted with this prepared statement, showing in 1978 the average dollar cost per million Btu's for coal used in steam generating plants. It shows that it was generally below the similar cost of oil and natural gas.

For example, looking at the west south-central part of the United States, the average dollar cost per million Btu's for oil used in steam generating plants in 1978 was $194; for gas, $135; and for coal, $72; which means that coal is substantially below the others.

I hasten to add that this does not take into account the increases in 1979, but I think it shows that coal is still a better buy than some of the other sources of energy. The point of this really is that it also shows that if we follow the policy of allowing the price of transportation of coal to go to the level suggested by the Department of Transportation, it would be more than twice what it was at the end of 1978. So that would be a tremendous increase over where we are right now.

The Department of Energy, on the other hand, recommends that the need to promote the development of coal as an alternative to imported oil be considered in setting rail rates on coal.

I guess we are saying that the rates as set today still make coal competitive. I have included in my prepared statement a chart illustrating how the ICC set the rail rate on coal in the *San Antonio III* decision.

In essence, the Commission determines the cost of providing the service, the level of profit, and any additional return justified by the railroads' overall revenue need. The Commission first determines the variable cost of performing the service for which the rate is proposed. Variable costs are those which can be allocated to the service. For example, train crews' salary, price of fuel for providing that service, wear on equipment, and so forth.

The Commission then develops fully allocated costs, which embody variable costs plus a portion of the railroad's fixed costs. In addition, the Commission has allowed the railroads in the coal cases to claim a fixed plant investment additive which reflects the additional capital

expenditures made by the railroad on its system in order to handle the specific coal movement.

Those expenses usually involve upgrading track and roadbed to handle high volume heavy movements. The Commission has allowed a return on investment of 10.6 percent which is equal to the cost of capital to the railroad industry.

Now this, in theory, is a return on investment which will allow the carrier to attract and retain sufficient capital in order to provide an adequate level of service for the movement under honest, efficient, and economical management.

In addition to allowing the railroads to recover fully allocated costs, including additional capital expenditures occasioned by the movement and adequate return on investment, the Commission has allowed the railroads to earn an additional 7 percent on the basis of their overall revenue need.

This additional revenue is based upon a showing that the railroad is not now earning sufficient revenue over its entire system to continue to provide an adequate level of service.

The Commission has indicated that the railroad may justify being allowed to earn additional revenue from this particular traffic if it can demonstrate that it needs the revenue and that it is unable to adequately increase rates on other types of traffic.

The Commission allowed a 7-percent increase in this case, based only on a showing of overall need because it felt that, in any case, the railroad would be able to justify at least that much. That analysis reflects the long-standing recognition that the contributions of different commodities to the overall cost and profit of the carriers must necessarily vary if maximum utilization of rail transportation facilities is to be achieved and if rail service is to be provided for many commodities which would not otherwise move.

This is known as differential pricing. Since many commodities handled by railroads are subject to varying degrees of competition from other railroads, from barges, and from trucks, the railroads cannot price all those commodities at a level sufficient to cover costs plus a fair profit.

Now, as long as those commodities make some contribution over the variable cost of providing the service to the fixed costs of operating the system, they make a contribution to the entire system and are therefore valuable to the system.

At the same time, however, other commodities such as coal can naturally be called upon to contribute more than fully allocated costs in order for the carriers to continue as viable businesses. If each commodity were priced at a specified level above fixed costs, certain commodities and their contribution over variable costs would, no doubt, be lost to the railroads.

This would be to the detriment of all remaining shippers, including coal shippers, because those lost contributions to fully allocated system costs would then have to come from the remaining traffic—that which is most dependent on rail service.

The result would likely be increased prices to the remaining shippers in order to keep the railroad operating. The rate authorized by the Commission in *San Antonio III* returns revenue which equals 176 percent of variable cost.

We have another chart here, which is also in the prepared statement, showing the extent to which certain major commodities move in excess of 180 percent of variable costs.

The chart indicates rates on steam coal correspond with those charged a number of other commodities. If you look down the list, you can see such things as, for example, locomotive railway car parts are moving well above variable cost—in excess of 180 percent of variable cost. Heavy machinery and many other commodities fall into that category.

The cases in which the Commission has established rates on coal moving in the West represent the development of an approach to some novel and original issues. The Commission's decision in *San Antonio III* and a related case which we refer to as SWEPCO, represent the most recent development in that approach.

As we gain experience in this area, we will refine our measurements and our application of them. We are reviewing the entire issue in our "western coal rate investigation" case and are developing specific guidelines in that proceeding where we will draw on the experience gained in the prior cases.

That completes my oral statement.

Senator BENTSEN. Thank you very much, Mr. O'Neal. We will return to you with questions in a moment.

[The prepared statement of Mr. O'Neal, together with an appendix, follows:]

PREPARED STATEMENT OF HON. A. DANIEL O'NEAL

Mr. Chairman and members of the committee, thank you for the opportunity to be here today to discuss the apparent conflicting national policies pertaining to energy and rail transportation. Your letter to me requesting the Interstate Commerce Commission to testify today indicates that you have a keen awareness of the balancing function the Commission performs in railroad coal rate proceedings. In order to provide as clear a picture as possible of the current manner in which we regulate, I believe it will be useful to explain briefly our traditional concepts of coal rate regulation (especially in the East), and then discuss the changes brought about by the Railroad Revitalization and Regulatory Reform Act of 1976 (the 4–R Act). I will then mention a few recent proceedings before the Commission on coal rates, and explain the actions we took in those proceedings. I will also mention a proceeding currently pending before the Commission, which, when decided, could have significant impacts on the matters raised in your letter.

In general, prior to the enactment of the 4–R Act, the Commission considered rail coal tariffs on an individual basis.[1] Under the then existing legal standards, the Commission evaluated the tariffs in terms of: (1) a comparison of the rate under consideration with established rates for comparable shipments in the territory involved; (2) the relationship between the rate and the cost of providing the service; and (3) the economic effects of the particular rate on communities. Thus, in our pre-4–R Act proceedings, our basic focus was on the individual rate in question, and we did not ordinarily look at the overall financial situation of the carriers.

Those pre-4–R Act proceedings generally involved movements of Eastern coal, since the development of Western coal is comparatively recent. The freight rate structure in the East has been shaped by competition among railroads, other modes, and mine areas. In those proceedings, the Commission's traditional policy has been to evaluate the reasonableness of particular rates on coal by reference to, among other things, comparable shipments, while taking into account the impact of a rate on a particular shipper, community, or region.

[1] In Ex Parte No. 270 (Sub-No. 4), Investigation of Railroad Rate Structure—Coal, 345 I.C.C. 71, 345 I.C.C. 493, decided Dec. 3, 1974 and Jan. 28, 1976, respectively, the Commission analyzed the coal rate structure generally. The emphasis in that proceeding, however, was on the impact of railroad general revenue increases on the transportation of coal.

Eastern coal rates evolved over a number of years. Coal moved from each of the major Eastern fields to the more important markets before either the Federal or State governments began regulating railroad rates. Very early and prior to regulation, a series of differently related origin rate groups were developed by the coal hauling railroads. Coal from all mines within a group were charged the same rate to a specific market. Mines of the group nearest the market were generally charged the lowest rate to the market, and were known as the base group. Mines from groups farther from the market were charged rates higher than those of the base group. By 1887, when Congress passed the Interstate Commerce Act, a group rate structure on eastern bituminous coal was by and large in place. This structure was, of course, based exclusively on single car movements—with the trainload pricing concept yet far into the future.

In general, the origin group rate structure for easatern coal evolved into seven distinct sub-structures, as listed below:

1. Appalachian groups to the Northeast,
2. Appalachian groups to the Tidewater,
3. Appalachian groups to the Midwest,
4. Appalachian groups to Great Lakes ports for water movement to Midwest,
5. Appalachian groups to Eastern ports for export,
6. Southern Appalachian groups to the South, and
7. Illinois-Indiana-Western Kentucky groups to the Midwest.

It is safe to say that the precise system of differential among the origin groups within each of these sub-structures was initially designed by the carriers to equalize the competitive opportunities of competing coal operators. Over the years, consideration expanded to include competition (1) between railroads, (2) between railroads and other modes of transport, (3) among alternative sources of fuel, and (4) among producing districts. As a result of these considerations, origin groups have been added, disappeared, expanded or reduced. Areas previously ungrouped have been included in groups, and areas once in groups are no longer part of the rate structure. In brief, the differentially related rate structure has been in constant evolution over the years. Since the mid-1950's, the trainload rate concept has made considerable strides toward becoming the major rate mechanism for eastern coal.

In a series of cases, beginning around 1955, the Commission approved a number of multiple-care rates on eastern coal designed to meet barge or barge-rail competition. In 1959, the first annual minimum volume rate case presented to the Commission was approved. These rates, from the Appalachian Fields to a major Virginia electric utility, were designed to meet the threat of mine-mouth generation of electricity. The rates, fairly typical of the genre, required that a single consignee receive 1,500,000 tons over designated routes in a prior twelve month period. (*Coal From Ky., Va., and W. Va. to Va.*, 308 I.C.C. 99 (1959)). The framework for detailed tailoring of train load rates was essentially set in place by 1960. In *Coal to New York Harbor Area*, 311 I.C.C. 355 (1960), the Commission approved a series of reductions on certain shipments over designated routes to meet the competition of unregulated motor carriers. Since the early-1960's, this tailoring has continued, resulting in a rate structure today for Eastern coal by which the majority of the traffic moves under specific point-to-point large volume rates.

The development of the Eastern rate structure is detailed in Ex Parte No. 270 (Sub-No. 4), *supra*. Originally, the structure was composed primarily of single-car rates which were traditionally structured according to the principle of grouping mines within a particular coal field for ratemaking purposes. In many cases, destinations are also grouped; each destination within a group takes the same rate for a given origin or origin group. In recent years, multiple-car, annual volume, trainload and unit train rates have become increasingly important. These rates are tailored to the needs of particular shippers or movements and do not necessarily follow the historical pattern of rate differentials between origin and destination rate groups.

The normal class rate on bituminous coal is 17½ percent of class 100. Although little or no coal traffic moves on class rates, the percentage can be used for comparison purposes. For example, our investigation in Ex Parte No. 270 indicates that single-car rates, from all origins, range from 4 percent of class 100 to about 9 percent of class 100, with the predominant number of rates ranging from 5 to 8 percent. Similarly, multiple-car rates generally range from 4 percent of class 100 to 8 percent, with the predominant number of rates between 5 and 6

percent, trainload rates in carrier's equipment are generally from 3 to 7 percent with most rates ranging from 3 to 5 percent; and trainload rates in shipper-owned cars generally range from 2 to 4 percent, with most rates approximating 3 percent. We found in that proceeding that the overall freight rate structure on coal was compensatory and not unreasonably high. It should be recognized, however, that the coal investigation was non-adversary in nature and that our finding was not intended to determine the reasonableness of individual rates.

Enactment of the 4–R Act substantially changed the Commission's rate evaluation process. The Act required the Commission to develop standards and procedures for establishing adequate revenue levels, and to make a continuing effort to assist the railroads in attaining those revenues. Those are responsibilities that previously had not specifically been imposed on the Commission by statute. Under that provision, the Commission must assist the railroads in attaining a level of revenues sufficient to provide the flow of funds necessary to cover operating outlays, depreciation, interest charges, and to allow for a level of dividends over time consistent with retaining and attracting equity capital to meet the level of justified investment needs. Thus, the 4–R Act added a fourth, and extremely important criterion, to the three mentioned above—the carrier's revenue adequacy.

In applying those criteria to particular cases, it should be noted that the Western coal carriers, Western coal markets, and Western coal transportation characteristics (including length of haul and competitive circumstances) are significantly different from those in the East. Most importantly, there is no well established rate structure for Western coal. The rates are evolving and do not yet afford a reliable basis for comparison with each other. As a consequence, recent Western coal cases have relied on cost of service and revenue need as the primary criteria in establishing maximum reasonableness. In the East, by contrast, rate comparisons have in the past been given more weight in determining maximum reasonable coal rates. Modern Eastern coal decisions must now evaluate both the effect of the proposed rate increase upon the existing rate structure and the carriers' need for adequate revenues.

In addition to the revenue adequacy change mandated by the 4–R Act, another important provision of the Act—especially with regard to coal shipments—is the "capital incentive" provision. Under that provision a carrier may file a notice of intent to file a capital incentive rate whenever an investment of one million dollars or more is required to provide the service. If an investigation of the rate is requested, the Commission must hold a hearing to consider its lawfulness. The burden of proof, after the carrier has established that it qualifies for capital incentive treatment, is on the shipper protesting the rate. If the Commission does not issue a decision within 180 days finding that the rate is unlawful, the carrier may place the rate into effect without fear of Commission intervention for a period of five years. The key distinction between this statute and other provisions dealing with rates is that under the capital incentive provision, the Commission has no power to interfere with the carrier's choice of rate level unless we make an affirmative finding that the proposed rate is unlawful.

A third important provision of the 4–R Act deals with market dominance. Basically, the Congress told the Commission to continue regulating where competition was inadequate to prevent monopoly pricing, to give the railroads freedom to price their services in competitive markets, and to devise a test to distinguish between the two situations.

We have devised that test. That action has produced a lively controversy. We feel that we drew the line at a reasonable level, but we believe the question of where the line should be drawn is a fair one and will benefit from increased discussion. We are well along in the process of reviewing our definition of market dominance in light of our experience under the 4–R Act. We recognize that the presumptions we established for determining market dominance have created some problems, especially since they are viewed as overly complex by some parties, particularly the railroads and the DOT. We are presently considering a more simplified threshold test for determining our jurisdiction.

Coal, for the most part, is market dominant traffic. However, the market dominance inquiry is merely a jurisdictional test; it is not the end of the inquiry. Under the law, a finding of market dominance does not mean that a rate is necessarily unreasonable. We must evaluate the reasonableness of the rate to determine its relation to carrier costs and to permit the carriers to achieve an adequate rate of return.

Most of our recent proceedings involve disputed issues of fact concerning the cost of transporting coal. In addition, the current disputes which surround

Commission decisions in coal rate cases all seem to involve what constitutes a reasonable profit level on coal traffic. Our recent cases have explored those matters in detail. Nevertheless, specific guidelines, which are the goal of the now-pending *Western Coal Investigation*,[2] are needed. That investigation will be the crucible for testing the criteria which are evolving in all our cases involving maximum rate regulation of noncompetitive traffic—not just Western coal.

In essence since the enactment of the 4–R Act, the Commission's role has continued to be one of balancing competing interests, but that Act required a shift in emphasis more in the direction of carrier financial well being. Certainly we are required to protect the public from excessive rates and to consider the energy implications of our decision, but we must also assist the carriers in attaining adequate revenues. And the general thrust of the Act is in the direction of less interference by the Commission in railroad ratemaking. However, the cases which come before us involve extremely complex issues which do not lend themselves to simple solution.

We are very much aware of the importance of coal as a prime energy source, and the concomitant importance of our rate decisions in terms of the prices that must be paid by the consumer of that energy. At the same time, we are equally aware of the capital investments that the railroads must make in their facilities in order to move coal—investments that cannot be funded if rates are held to an artificially low level. The simple fact is that any energy source costs money—and in the case of coal, that includes not only the cost of getting it out of the ground, but the cost of moving it from the mine to the user. I can assure you that we are working hard to establish standards which take into account the legitimate needs of everyone involved in coal production, transportation and consumption.

In our cases we are generally faced with two diametrically opposed sets of arguments. The shippers would like coal rates to be set strictly according to costs. We are asked to find the precise cost for individual movements and to allow rates at that level and no higher. The carriers, on the other hand, would like coal rates set at a level which will improve the poor financial performance of the railroads and to achieve an appropriate rate of return on a system-wide investment base.

It should be noted that the Department of Energy and the Department of Transportation often present conflicting viewpoints in these coal cases. In Ex Parte No. 347, for example, DOT urges that coal rates should be allowed to rise so long as the delivered price of coal per BTU of energy does not exceed the delivered price of oil or other alternative fuels per BTU.

The Department of Energy, on the other hand, takes the position that rail rates should be held down to avoid an adverse impact on the National Energy Policy. It seeks consideration of the rate of return on the incremental costs associated with new coal movements. DOE further states that it knows of no precise formula by which to balance energy considerations, monopoly regulation and the need to establish adequate revenue levels for railroads in individual cases, and that the Commission will have to balance these considerations.

Those issues and others have not been finally resolved as a general matter; only in particular cases. In other words, our decisions have followed a case-by-case approach to defining a reasonable level for Western coal rates. That approach has resulted in a growing sophistication concerning the ultimate resolution of these issues. Nevertheless, we believe that certain basic guidelines are necessary and it is for this reason that we are presently conducting the Ex Parte 347 proceedings to formulate appropriate guidelines.

I realize that the level of concern among those who produce, transport, and use coal has increased over the past three years. Users have been hit by higher

[2] Ex Parte No. 347, Western Coal Investigation—Guidelines for Railroad Rate Structure. In May 1978 the Commission instituted an investigation of the Western coal freight rate structure to assess the desirability of determining guidelines for minimum and/or maximum rates for the large-volume movements of Western coal. That investigation has evolved into an evaluation of appropriate criteria for maximum rate regulation of all noncompetitive rail traffic.

The Commission also determined that the magnitude of the proceeding warranted the preparation of an Environmental Impact Statement (EIS) on the Western coal situation. Currently in preparation, the EIS will forecast the environmental impacts associated with possible alternative freight rate guidelines which could be adopted by the Commission in this proceeding. The environmental impacts would result from the use (including the transportation by rail) of Western coal versus a shift to other fuels (nuclear, gas, oil) or alternative transportation modes (coal slurry pipelines, barges, etc.). The analysis will consider what Western coal freight rates could attain levels which trigger the consideration of alternative fuels, transportation modes, and/or location of coal consumption (e.g., mine mouth generation).

transportation costs and carriers are looking to coal traffic as one of the major ingredients to restore their sagging profit levels. One thing that all parties should be able to agree to is that the pre-4–R Act rate levels on coal were generally too low. The rate levels were dictated by the competition of cheap import oil and domestic natural gas prior to the energy crisis of 1973–1974. One simply cannot expect the transportation prices of 1979 to reflect competitive conditions which no longer exist. At the same time, users should be able to rely on regulation by the Commission to prevent the railroads from charging excessive prices when there is no effective competition. In the last general rate increase filed by the railroads, the Commission took decisive action to protect utility ratepayers. We limited the increase applied to recently litigated coal movements to an amount justified by cost increases. We prohibited the application of a revenue factor to prevent the carriers from "double-dipping." This held the increase to 5.5 percent rather than amounts as high as 13 percent which the carriers had proposed.

The Commission has recently approached this situation in a number of cases. In the SWEPCO[3] and in the *San Antonio III*[4] case, the authorized rate included a seven percent increment justified not on the basis of a need for revenue to provide the service at issue, but rather as a contribution to the overall revenue need of the carriers. A majority of the Commission noted that it would not allow captive traffic to compensate for lower revenues on other traffic without justification, but noted that it would be unreasonable to obtain the same contribution to revenue from each segment of traffic, so that some increment—in the range of from 5 to 10 percent—could be allowed merely on the basis of a showing of revenue need overall. The Commission's discussion of its reasoning on this point is appended as Appendix A to the statement. It should be noted that Commissioners Gresham and Christian dissented from the *SWEPCO* and *San Antonio III* decisions and would have authorized the rates sought.

In *San Antonio III* the Commission observed that rates cannot be set simply to cover the costs incurred in providing a particular service, but must be set at a higher level where possible to make a contribution to the coverage of fixed costs. The railroads must be able to price some of their services above full cost if they are to compensate for the fact that competition forces them to price certain services above variable cost but below full cost.

Nevertheless, we recognized that railroads should not be allowed to make up their entire shortfall by extracting monopoly profits from captive coal shippers. Some limit must be placed on rates to prevent unfairness to individual shippers and distortions in the economy.

Until a railroad has shown that it is unable to increase revenue on its competitive traffic, the Commission will be reluctant to approve or prescribe rates which are significantly higher than fully allocated cost (at the revenue need level) on coal traffic.

In *San Antonio III*, the Commission decided that a rate set at 7 percent above fully allocated cost at revenue need level was reasonable and necessary to meet the system needs of the carriers. For your information, we have prepared the following chart which illustrates the various calculations which were made to determine the prescribed rate in *San Antonio III*.

Comparision of rates and costs for Docket No. 36180

1. Variable cost	$9.79
2. Fully allocated cost (per ton, including variable cost)	12.36
3. Fix plant investment additive	.43
4. Total fully allocated costs including additive	12.79
5. Adjustment to rail Form A cost to reflect a 10.6-percent revenue need factor	2.69
6. Total fully allocated costs including additive and revenue need factor	15.48
7. A 7-percent additive to meet system needs of railroads	1.13
8. A 4-percent general rate increase from Ex Parte No. 349	.62
9. Total prescribed rate	17.23

We should note that coal is not the only commodity that moves at rates in excess of fully allocated costs. The following chart shows a representative sample of various commodities where a large percentage of the traffic moves on

[3] No. 36970, *Annual Volume Rates on Coal—Wyoming to Flint Creek, Arkansas*, served May 25, 1979.

[4] No. 36180, *San Antonio, Texas, Acting By and Through Its Public Service Board* v. *Burlington Northern, et al.*, served June 1, 1979.

rates in excess of 180 percent of variable cost. Thus, for example, 56 percent of all carloads of primary copper products move at rates in excess of 180 percent of variable costs.

Representative SPC commodity groups with a large percentage of the traffic (carloads) in excess of 180 percent of variable cost [1]

SPSC No. and descriptive name		*Percentage in excess of 180 percent variable cost*
2	Wheat	35.21
15	Iron ore	40.64
36	Wet corn milling products	22.19
57	Newsprint paper	61.44
68	Barium calcium compounds	41.09
70	Soda ash	45.10
77	Plastic materials	59.11
91	Glass containers	21.00
98	Pig iron	39.81
100	Manufactured iron or steel	42.27
101	Iron/steel pipe, tubing/fitting	32.32
104	Primary copper products	56.00
106	Primary aluminum products	56.34
111	Heavy machinery	51.29
117	Locomotive/railway car parts	55.17

[1] Based on a A. T. Kearney analysis of 1977 1 percent waybill file. Source: Exhibit V–6 Interim Report II dated Apr. 10, 1979—"A Study to Perform an In-Depth Analysis of Market Dominance and its Relationship to Other Provisions of the 4–R Act."

I would now like to discuss generally the theory behind our recent coal rate decisions. As mentioned, the recent rate increases allowed by the Commission were considerably less than the increases initially sought by the railroads. The railroads have taken the position that if *overall* revenue adequacy is to be achieved the railroads must be able to set rates in accordance with current demand circumstances that will maximize the contribution which a commodity can make to railroad costs and profits. It has long been recognized that the contributions of different commodities to the overall cost and profit of the carriers must necessarily vary if maximum utilization of rail transportation facilities is to be achieved and if rail service is to be provided for many commodities which would not otherwise move. This is known as differential pricing.

Since many commodities handled by railroads are subject to varying degrees of competition from other railroads, barges and trucks, the railroads cannot price all those commodities at a level sufficient to cover costs *plus* a fair profit. As long as those commodities make some contribution (over the variable cost of providing the service) to the fixed cost of operating the system, they should and must be retained in order to keep as much traffic as possible for the railroads. However, if such traffic cannot, for competitive reasons, contribute its share to achieve overall revenue adequacy vis-a-vis other commodities, those other commodities, including coal, must be priced in excess of their fully allocated cost in order for the carriers to achieve overall revenue adequacy. If each commodity were priced at a level designed to contribute a proportionate share of revenues to the fixed costs and profits of the railroad, and no more, certain commodities, and their contribution over variable costs, would be lost to the railroads. This would be to the detriment of all remaining shippers, including coal shippers, because those lost contributions to fully allocated system costs would then have to be apportioned or allocated among the remaining traffic most dependent on rail service.

It should be noted that the Commission's decisions in two important coal cases—*Smithers Lake and Cochise* [5 6]—were recently upheld by the U.S. Court of Appeals for the District of Columbia Circuit.[7] In discussing differential pricing, the court stated as follows (Slip Opinion, p. 32):

"The Commission concluded that § 10704(a)(2)'s command permits some rates to be set at a level exceeding fully allocated costs in order to compensate for those rates which must be set at less than fully allocated costs to meet competition from other transport modes. This was neither arbitrary nor forbidden by the Act. It is pertinent to the objective of providing an adequate overall level

[5 6] No. 36608, *Incentive Rates on Coal—Cordero, Wyoming, to Smithers Lake, Texas*, and No. 36612, *Incentive Rates on Coal—Gallup, New Mexico to Cochise, Arizona*, respectively.

[7] *Houston Light & Power Co.* v. *United States, et al., Nos.* 77–2070, et al. (D.C. Cir., June 26, 1979).

of earnings. If traffic with a high value of service is viewed in isolation it bears a heavy burden. Yet all shippers ultimately benefit when the rail carriers are able to generate revenues needed for survival.

"It is not a fatal flaw that some traffic is carried at rates above total cost; the revenues from such traffic when added to revenues from traffic that competition requires be carried at less than full cost (but with some contribution to fixed costs), yield adequate overall revenues. This does not imply that the rail carriers are free to charge whatever the traffic will bear. In this very case, the Commission did put limits on some proposed rates, rejecting the $16.54 rate proposal of the carriers for HL&P's traffic."

Although this decision upholds the legality of our actions in these cases, we believe it is somewhat premature to evaluate the results of our application of the 4–R Act provisions to coal proceedings. To be sure, we have in general suspended very few rate increases since enactment of the Act, since they have not met the threshold tests needed to allow suspension. However, coal shipments are normally market dominant, and we thus have jurisdiction to determine the reasonableness of the rates involved. Of course, that fact is not dispositive of the proceeding. Rather, we must then determine, using the criteria discussed previously, whether a rate is unreasonable. In general, we believe we have done an adequate job in balancing the interests of the competing parties in those proceedings. We have not given the railroads all they have sought, nor have we limited increases to unrealistically low levels.

In addition, we have seen no evidence indicating that the delivered price of coal, including the transportation cost, has been at a level that would make it noncompetitive with other energy sources. As the following chart shows, the dollar cost per million BTU's of operating capacity where coal is used for power generation compares favorably to the use of oil or natural gas. The same chart also shows regional variations in price. Therefore, it appears that our efforts to ensure that the railroads achieve adequate revenue levels are not inconsistent with the effort to increase the use of coal. We are aware that an exclusive focus on either the effort to increase coal use or the effort to insure adequate rail revenues would produce unsatisfactory results. Both policies must be administered, to the extent possible, in such a way as not to compromise each other, and so the Commission's role must, and will, continue to be one of balancing competing interests.

AVERAGE DOLLAR COST PER MILLION BTU'S FOR STEAM GENERATING PLANTS FOR 1978[1]

Region	Oil	Gas	Coal
National	215.5	143.8	111.6
New England	196.4	187.8	147.5
Middle Atlantic	211.4	173.2	120.2
East north-central	261.9	236.7	121.6
West north-central	205.5	122.1	91.7
South Atlantic	202.7	106.5	131.5
East south-central	186.0	131.6	120.9
West south-central	194.0	135.1	72.9
Mountain	221.3	148.3	52.8
Pacific	258.1	218.0	77.9

[1] Preliminary 1978 figures prepared by the National Coal Association (these statistics do not take into account the coal cases decided by the Commission in 1979).

That concludes my prepared statement. I will be glad to respond to any questions you may have.

APPENDIX A

The railroads argue that they compete actively with motor and water carriers for traffic. As a result they cannot charge rates equal to their costs plus a reasonable return on investment on all of the traffic they haul. The carriers contend that the Commission should permit them to charge rates substantially exceeding costs plus a reasonable profit on market-dominant traffic. This will compensate the carriers for lower earnings on other traffic. The carriers refer to this pricing strategy as differential pricing.

The Commission has, in the past, recognized the role of differential pricing in railroad ratemaking in general. In Ex Parte No. 338, Standards and Procedures for the Establishment of Adequate Railroad Revenue Levels, ——— I.C.C.

——— (decision served February 3, 1978, at page 17), we observed that rates cannot be set simply to cover the costs incurred in providing a particular service, but must be set at a higher level where possible to make a contribution to the coverage of fixed costs. The railroads must be able to price some of their services above full cost if they are to compensate for the fact that competition forces them to price certain services above variable cost but below full cost.

Nevertheless, the railroads should not be allowed to make up their entire shortfall by extracting monopoly profits from captive shippers. It is essential that some limit be placed on rates to prevent unfairness to individual shippers and distortions in the economy. At the same time we should be careful not to force the railroads to carry coal at a rate which is artificially low. If we set one formula for coal rates, then we must be prepared to apply that formula to similarly situated shippers of other commodities.

The question is one of determining the extent to which some shippers should subsidize others in the interest of producing a financially viable rail system. There is no simple formula for making that determination. Before the Commission can impose a substantial burden on some shippers, the railroads must show more than revenue need on a system basis. The Commission must have additional data, including (1) specific identification of the traffic that must be subsidized by other traffic and the reason why rates cannot be increased on that traffic; (2) the extent to which the railroads provide service on unprofitable branch lines and the reason(s) why such service cannot be made profitable or abandoned; (3) identification of commodities other than coal which could also make substantial contributions to the railroads' system revenue needs; and (4) identification and quantification of excess capacity on a carrier's system.

A related consideration here is our policy to encourage innovative and aggressive marketing and pricing policies on competitive traffic. The railroads need to take a hard look at cost of service and either weed out the traffic which is noncompensatory or else raise rates where possible. Until a railroad has shown that it is unable to increase revenue on its competitive traffic, we will be reluctant to approve or prescribe rates which are significantly higher than fully allocated cost (at the revenue need level) on traffic such as that involved here.

Regulation of rates where differential pricing is required necessarily involves a policy judgment. The Commission has underway a proceeding which could lead to more precise standards in this area. Ex parte No. 347, *Western Coal Investigation—Guidelines for Railroad Rate Structure*, notice of proposed rulemaking served May 17, 1978. In the interim, the explicit mandate of the 4–R Act to give deference to carrier revenue need in rates proceedings cannot be ignored (49 U.S.C. Section 10704(a)(2)).

We cannot find that the railroads involved here have achieved revenue adequacy. Our own standards (see Ex Parte No. 353, supra) indicate that their rates of return are low.[1] Thus some increment above fully allocated cost is desirable and logical on traffic such as that involved here.

Based on these considerations, we believe a rate set at seven percent above fully allocated cost (calculated at the revenue need level) is reasonable in the interest of providing increased revenues to meet the system needs of the defendants. This figure represents our best judgment as to an appropriate increment to be borne by the Flint Creek movement. Based on this seven percent increment, we find that a rate not exceeding $10.24 is just and reasonable for this movement.

An increment above this level might be justified by a strong showing that the railroad is unable to increase revenue on its competitive traffic. Evidence of the carrier's traffic mix would be extremely important in this consideration.

Pending the formulation of more precise standards in Ex Parte No. 347, we believe a seven percent increment is warranted on the record. As indicated above, carriers which believe this increment is inadequate may introduce evidence concerning their attempts to increase revenue on competitive traffic by modern cost finding, aggressive and innovative marketing techniques, and pricing policies. An analysis of the carriers traffic mix will be required. Evidence submitted in the yearly revenue need proceedings will also be considered.

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[1] In Ex Parte No. 353, supra, we determined that, on a national basis, the railroads have a cost of capital for revenue adequacy purposes of 10.6 percent. Both BN and KCS earn returns on net investment lower than 10.6 percent. BN's rate of return on net investment has been below 3 percent for each of the last 7 years. KCS earned an average return on net investment of 4.2 percent between 1970–77. In 1978, KCS's rate of return was only 5.1 percent.

Finally, it must be emphasized that it should not be inferred, from the apparent numerical precision contained in our statements here, that we have arrived at a permanent formula for determining maximum rates on this coal movement or any other coal movement. We have provided a precise answer because that is our obligation in a proceeding such as this.

Authorizing a rate not to exceed fully allocated cost plus a return factor based upon the carriers' overall capital costs and a seven percent increment represents our best judgment as to the maximum reasonable rate on this traffic at this time. As discussed earlier, reliance on comparable movements, which has been a traditional indicator of maximum reasonableness, would not have been appropriate in view of the dynamic nature of the western coal rate structure. A more refined methodology for determining maximum reasonableness of western coal rates must await our decision in Ex Parte No. 347, *supra.*

Senator BENTSEN. Mr. Coleman, if you would proceed.

STATEMENT OF LYNN R. COLEMAN, GENERAL COUNSEL, DEPARTMENT OF ENERGY

Mr. COLEMAN. Senator Bentsen, Senator McGovern, thank you for the opportunity to be here this morning to discuss this important question. The Department of Energy is very concerned about the issue of coal-haul rates because of the very fundamental fact that has been brought out in testimony earlier today, that in the Southwest, where you are talking about bringing Rocky Mountain coal as boiler fuel for new powerplants, the rail tariff represents two-thirds to three-fourths of the cost of delivered coal.

That I think puts the question in context very nicely. It tells you that rail transportation policy with respect to coal is perhaps in that magnitude even more important, perhaps, than some portions of our policy with respect to mining, and certainly a lot more important than the cost of coal at the mine mouth.

We think it's an issue that has not received the attention that it deserves, and I commend the chairman for holding these hearings to focus the spotlight on these questions.

The Congress passed the Fuel Use Act as part of the National Energy Act in 1978 that effectively forbids construction of new powerplants that will use oil or gas unless an exemption is obtained. But the restrictions on moving to coal with respect to existing powerplants are much less stringent.

So we essentially have to look to economics, where we are talking about existing powerplants if we want to move those powerplants away from use of imported oil. I suppose the common ingredient that all of our energy policies have is a desire to reduce reliance on imported foreign petroleum, where we are captive to the economic wishes of the Organization of Petroleum Exporting Countries.

Now, the utility looking at a decision to convert to coal faces an early retirement of existing oil- and gas-fired generating units even before the end of their useful life. They must weigh the fact that the cost of constructing new coal facilities is perhaps six or seven times greater than the cost of constructing those same oil- or gas-fired facilities which may be retired. So, obviously, the operating costs of the new coal-fired facilities have got to be attractive, or they either are not going to make the investment, or they will defer the investment, either of which has a deleterious effect on our oil import policy.

The second major consideration is that even if the utility has coal-fired capacity right now, and they also have oil-fired capacity or gas-fired capacity, the extent to which they are going to baseload their coal facilities is predicated on the cost factors. Utility rates are essentially set on the average cost of generating a kilowatt of electricity.

A prudent businessman is going to run his lower cost facilities before he runs higher cost facilities. And the effect of that is a reduction of the amount of coal you burn vis-a-vis the amount of oil or gas you burn where you have the choice. So from this standpoint, coal transportation tariffs also play a very important role.

We are sufficiently concerned about this to have intervened in three proceedings at the Interstate Commerce Commission:

One, the San Antonio case where we thought the rate established was too high and that the ICC had not sufficiently explained the justification for it; two, the generic Western rate case, docket 347, in which we made a detailed study, which we will furnish the committee,[1] of the experience of Houston Lighting & Power and the impact on that utility of the coal rate on their decisions to install new coal-burning capacity or the amount of coal they would burn versus the amount of oil or gas; and three, the Louisville and Nashville case which presents an Eastern coal question.

We brought to the attention of the ICC the notion that in establishing coal tariffs they must take account of energy policy as well. We are fully cognizant of the need to restore the capacity of the railroads to function as healthy members of our economy. Indeed, it's very important for the hauling of coal that railroads be adequate to that purpose.

Senator McGovern, we're very concerned about the possible abandonment of the Milwaukee Railroad, which would have the tendency, were that to occur, to place coal shippers and wheat farmers in North and South Dakota and Montana in much the same position as the people of San Antonio. It would tend to put the Burlington Northern Railroad in a monopoly position with respect to those areas.

The Milwaukee Railroad is a significant one and may have great future significance in terms of hauling coal, because the largest deposit in the country is at Fort Union out there, it probably has something like 40 percent of the Nation's coal reserves, at least in the West.

That's an example of the need to look to the financial viability of the railroads. We don't really differ with the theory that the ICC usually follows. We do differ with the manner in which it is applied in a particular case. It seems to us that if you look at a prospective coal shipment the first test ought to be a practical one any businessman would apply: Do the marginal revenues exceed the marginal costs? The ICC refers marginal costs to as "variable costs." Then you go to the next step: To allocate a fair share of the fixed costs, the President's salary, management overhead, depreciation and the like to this particular shipment. We don't particularly disagree with the formula used by the ICC for that purpose.

Then you come to the next step which they refer to as "differential pricing." That is a judgment as to the extent to which cross-subsidiza-

[1] See ICC docket No. 347 in the appendix to the hearing.

tion is necessary. In other words, how much more than the full cost of the service should this particular coal service bear to make up for the fact that there is competitive service—which cannot bear its full costs—on that railroad?

Now frankly, we are willing to recognize that in an appropriate case that some degree of differential pricing is appropriate. We think, however, that before it is allowed, there must be a factual determination upon a record that you can understand of what the railroads revenue requirements are, and what are the deficiencies as a result of competitive traffic so that you come up with a specific figure that must be made up from the profitable traffic; in most instances, coal.

In this way, the agency knows exactly what they are doing, and the customers of that railroad can have some confidence as to what the formula for coal tariffs is going to be.

If you look at that chart right behind you, I do not believe that either consumers of San Antonio or any other utility that might be switching to coal could have very much confidence as to what is going to happen to coal-haul rates in the future.

I think it's really unfortunate that the only competitive limit on what the railroads have been able to charge their customers is the cost of imported coal from far off countries such as Africa, Australia, or even Poland.

I think that concludes the summary of my prepared statement which we will submit for the record together with the appendix material which shows what we have done in some of these cases.

[The prepared statement of Mr. Coleman, together with an appendix, follows:]

PREPARED STATEMENT OF LYNN R. COLEMAN

Mr. Chairman and Members of the Committee, I appreciate the opportunity to appear before you to discuss the relationship of railroad coal tariffs to national energy objectives as viewed by the Department of Energy (DOE).

One of the central goals of the national energy program is the increased use of coal to replace imported oil. Coal constitutes 90 percent of conventional energy reserves in the United States; yet, coal currently supplies only 20 percent of our energy consumption.

On a nationwide basis, increased coal use is frequently an economic and efficient means to reduce reliance on oil and natural gas for the generation of electrical energy and in industrial processes. The greatest potential for new coal-fired plants exists in southwestern and northeastern states, particularly states like Texas which have access to abundant western coal reserves. Significant potential exists as well for states situated east of the Mississippi River.

Electric utilities today are the major users of coal in the United States. The industrial sector, on the other hand, represents one of our greatest new markets for coal use. Electric utilities now transport about 50 percent of the coal utilized to generate electricity by railroad, and more than half of the industries which depend today on coal-fired boilers ship their coal by railroad.

Electric utilities and industries which do depend on coal primarily rely on railroads. Large shippers of coal today generally have little ability to affect the amount of the coal tariff. As a result, increases in railroad coal tariffs not disallowed by the ICC can have a significant impact on the price of energy produced from coal and can effect the competitiveness of coal as a fuel source.

The financial health of the nation's railroads is of utmost importance to the success of the coal conversion program. Rail transportation must be available today and in the future to move the large quantities of coal required for electric utilities and industries. Consequently, railroad tariffs for the movement of coal must adequately compensate the carrier and must make an appropriate contribution to the revenues of the railroad. To the extent that economically rational

coal tariffs impact on the economics of the coal conversion program, this impact must be accepted in the interests of insuring adequate national railroad transportation capacity. However, coal traffic must not be the sole source of additional revenue necessary to make the railroads a healthy and viable industry and must not be exploited as a captive source of profits.

The task confronting all interested persons is to develop a regulatory framework which reflects a fair balance between national transportation and energy goals. I wish to underscore the urgency of this task by delineating the substantial impacts of railroad tariffs on coal use, as well as the current response of the ICC, and will describe the Department of Energy's efforts to develop a national set of regulatory principles in this area.

Increased coal tariffs for the movement of coal can affect the implementation of national energy policy in several ways. First, higher coal tariffs can reduce the use by electric utilities of presently existing coal-fired generating units in the dispatch of power, thereby reducing the use of coal. Second, higher coal tariffs decrease the economic savings which would be realized as a result of the conversion from oil and gas-fired boilers to coal-fired boilers. Third, higher coal tariffs can have a negative impact on decisions by electric utilities and industry to replace existing oil and gas-fired capacity with coal-fired capacity.

As a consequence of the potential impact of increased coal tariffs on national energy goals, the Department of Energy has intervened in several proceedings before the Interstate Commerce Commission where increased coal tariffs were at issue. In these proceedings, the Department has introduced extensive studies which demonstrate that the level of the coal tariff affects the economics of operating the generating units in an electric utility system. Most electric utilities will dispatch their generating units as a function of marginal operating costs. Consequently, the generating units with the lowest operating cost will be dispatched to meet the next increment in demand for electricity. Thus, as coal tariffs are increased, the system will tend to use less and less coal-fired generating capacity as the increased cost of fuel tends to make such units less economic to meet an incremental increase in demand.

The degree to which the dispatch of generating units is affected by higher tariffs depends on many variables including the amount of the tariff increase and the array of units available to the utility. However, analyses performed by the Department indicate that the effect of increased coal tariff on system dispatch can be quite dramatic.

In addition, conversion to coal by electric utilities offers the potential of reducing the rate of increase in the cost of generating electricity. As the costs of generation are controlled, then increases in the price of electricity to consumers will also be controlled. However, utilities would not plan to build new coal-fired capacity in order to replace existing oil and gas-fired boilers unless they anticipated certain savings from the conversion. In fact, what controls the decision to replace oil and gas-fired capacity is the expectation of substantially lower operating costs associated with coal or any other alternate fuel fired facilities. The savings which would be realized from reduced fuel costs, under most State public utility regulations, would be passed on to consumers of electricity by virtue of fuel adjustment clauses. Thus, the consumer of electricity should benefit from replacement of oil and gas-fired facilities by those fired by coal. Nonetheless, the Interstate Commerce Commission has been urged in several proceedings to increase coal tariffs for western coal movements in an amount higher than we believe that actual service would appear to warrant.

The greatest potential source of national benefits from the coal conversion program is the early replacement of existing oil and gas-fired capacity by coal-fired capacity. A decision to replace oil or gas-fired boiler capacity by coal-fired capacity will depend on a number of factors, including:

—The regulatory framework within which electric utilities and industry must operate;

—the relative availability in the future of the various fuels; and

—the life cycle cost of the coal-fired boiler compared to the cost of continued reliance on existing oil and gas-fired boilers.

A basic ingredient of the regulatory framework which affects utilities and industry in regard to their use of oil and gas is the Powerplant and Industrial Fuel Use Act ("FUA"). Under certain conditions, FUA mandates the increased use of coal and alternative fuels as the primary energy sources for existing and new electric utility generating units and major industrial fuel-burning

installations. That Act, however, does not preclude utilities and industries from a continued reliance on existing oil and gas-burning facilities. Therefore, as long as utilities and industries perceive that oil and gas will remain available for use in the foreseeable future, there will be no incentive to replace existing oil and gas-fired capacity with coal-fired capacity unless the replacement generates some long-term economic advantage.

A key criterion in determining whether to replace capacity is whether the savings in operating costs occasioned by the use of new capacity in lieu of existing capacity would outweigh the capital costs associated with constructing the new capacity. If the savings to be derived from operating costs outweigh the capital costs, replacement of existing oil and gas fired boilers becomes economically appropriate. Thus, an economic decision to replace existing oil and gas fired capacity with new coal-fired capacity depends on the projected operating cost savings associated with the new capacity. Projected operating cost savings will come primarily from one source: the cost of fuel.

In the western United States, large distances often separate the mine where the coal is produced and the generating station where the coal is burned. Consequently, the cost of coal in the West is largely determined by the cost of transporting that coal from the mine to the utility. In fact, because of the relatively inexpensive methods used in the West to mine coal and the large distances between the coal mine and the coal-burning facility, the delivered cost of coal is generally one-third due to the mine cost and two-thirds due to the transportation costs. Consequently, early replacement of existing oil and gas boilers by coal-fired boilers can be affected significantly by the tariffs at which coal is transported.

Because of the long lead time associated with the construction of coal-fired capacity, utilities and industry alike must make decisions to replace existing capacity with coal-fired capacity as much as eight or more years in advance of that time when the capacity is planned to be available. If electric utilities and industry perceive that the ICC will prescribe coal tariffs that are unreasonably high, the economic incentive to replace existing oil and gas-fired capacity will be eliminated and electric utilities and industry will rely for a considerably longer time on their existing oil and gas-fired capacity. This result would be contrary to national energy policy goals.

Several significant rate decisions involving substantial economic impacts on coal users have been issued by the ICC subsequent to passage of the Railroad Revitalization and Regulatory Reform Act in 1976 ("4–R Act"). The Interstate Commerce Commission investigates those railroad rates which are not subject to competition.

Under the 4–R Act, many western coal tariffs have been investigated by the ICC. Such investigations often have required a careful balancing of the national energy policy objective of increasing coal use with the need to insure that the railroad industry remains financially viable. The most significant recent ICC cases which concern increased coal tariffs are listed in the attached Appendix. That list indicates that during the past several years, the railroads have proposed increases on their coal traffic which range from 24 percent to 53 percent.

Because of the impact of increased coal tariffs on the objectives of the coal conversion program, the DOE has intervened in several recent ICC investigations to advocate the development of a costing methodology for coal tariffs which will ensure that coal bears only its fair share of costs, including a fair return on capital. To the extent that the resulting tariff impacts on the economics of coal conversion, that impact must be accepted in the interests of generating adequate revenues necessary to insure the availability of an adequate reliable, efficient and effective railroad transportation system.

To this end, DOE has recommended that the ICC adopt the following principles which would establish an appropriate balance between national energy policy goals and national transportation goals:

1. All railroad rates for the movement of coal as well as other commodities should be based in the first instance on the incremental costs of the respective movements.

2. The revenue needs of the entire rairoad should be determined and the respective contribution to be made by each commodity should be decided simultaneously in accordance with the determined revenue need. To determine the fully allocated cost of each commodity, fixed costs should be allocated to that commodity in direct proportion to its incremental costs.

3. Differential pricing, that is, charging on the basis of the ability to pay different prices for similar service, should be permitted only to the extent that the railroad can reasonably show that, in terms of net revenue generation, some commodities should not be assessed tariffs equal to their fully allocated costs and that these commodities are paying tariffs at least equal to their respective incremental costs. Only in this instance should coal or some other commodity which is moved under conditions of market dominance bear a disproportionate share of the fixed costs of the railroad.

To date, the approach advocated by DOE has not prevailed.

The current regulatory atmosphere and problems it presents are well-illustrated by the attempts of the City of San Antonio to obtain coal from Wyoming via the Burlington Northern Railroad (BN) for its recently constructed $250 million coal-fired power plant.

The City of San Antonio was one of the first electric utility companies in Texas to construct a coal-fired power plant because of rapidly accelerating natural gas prices in the early 1970's. In its initial negotiations with the BN, San Antonio says the railroad proposed a tariff at $7.90 a ton. However, after securing a commitment from San Antonio, BN later increased the tariff to $11.09 per ton, an increase of more than 40 percent. Additionally, the BN required San Antonio to provide its own 100-ton coal cars.

San Antonio officials then turned to another railroad, the C&NW, which also had solicited San Antonio's coal traffic and could transport the coal from Wyoming. However, following the BN's escalated offer, C&NW declined to pursue its earlier interest in San Antonio's business. San Antonio was left with no transportation alternative and consequently was compelled to make arrangements for the purchase of 770 freight cars at a cost of $25 million and for the construction of car servicing and maintenance facilities at a cost of several hundred thousand dollars.

Thereafter, San Antonio filed a complaint with the ICC in May 1975. As a result of the Commission's investigation into the tariff quoted by the BN, the ICC prescribed a tariff of $10.93 per ton. In March 1977, the Eighth Circuit Court of Appeals affirmed the Commission's decision.

In early 1977, pursuant to BN's petition, the ICC reopened the proceedings to receive new cost evidence based on actual operating experience. In view of the serious policy implications of this matter, DOE intervened in the reopened proceedings in Decemmber, 1977 to present its views that:

(1) In setting rates for the transportation of coal, the ICC must consider the impact of such rates on national energy policy objectives; and,

(2) Unit train tariffs set at a level higher than the costs associated with a specific movement could discourage San Antonio, as well as other electric utilities, from making investment decisions to build coal-burning capacity.

As a result of that proceeding, the ICC issued a decision in October, 1978 establishing a tariff of $16.12 per ton. In so deciding, the Commission, in our opinion, took little account of the impact of the tariff on national coal conversion objectives. Moreover, while we feel the Commission recognized that BN failed to submit significant evidence of actual operating experience, ICC did not hesitate to set a rate considerable higher than that advocated by San Antonio. The Commission took this action despite its view that such evidence was "particularly important" in view of the tactics employed earlier by the BN.

Thereafter, upon a Petition for Reconsideration filed by BN, the Commission further increased the tariff from $16.12 per ton to $17.23 per ton. This amended tariff was increased in part because of a 7 percent "revenue need additive" which we at DOE believe effectively requires electric consumers in San Antonio to subsidize operations of the BN which are unrelated to those services which San Antonio consumers receive from the railroad. It is our understanding that San Antonio now is investigating the possibility of importing coal from Australia.

The Administration recently submitted a bill, the *Railroad Deregulation Act of 1979* which would address the problem of rising coal tariffs with a provision to allow long-term contracts rates. This should eliminate much of the businessman's uncertainty in this area.

Subsequent to the San Antonio intervention, DOE began to articulate in other ICC proceedings the need to balance railroad revenue needs with national energy goals. In Ex Parte 347, the Western Coal Investigation, which is still pending before the ICC, DOE presented an extensive analysis of the impact of rail tariffs on the economics of coal conversion, by examining the system of the

Houston Lighting and Power (HL&P) Company. That analysis concluded that by increasing the tariff from $11.00 per ton as proposed by HL&P to $15.80 per ton as requested by the railroads, HL&P would burn approximately 2800 more barrels of oil equivalent per day between now and 1985. In addition, our analysis shows that a tariff of this magnitude would create a strong economic incentive to defer from 1986 through the end of the century the construction of at least one large, 570 MW coal-fired generating unit.

More recently, the DOE has performed a similar study in another proceediny also pending before the ICC. The DOE analysis shows that between 1985 and 2005, the requested coal tariff increase would eliminate the economic benefits which otherwise would have existed for the construction of an additional 660 megawatts (MW) of coal-fired generation which would have displaced existing oil and gas-fired capacity. This would translate to 1,100 to 18,400 barrels per day, depending on the price of the residual oil which would be burned due to the absence of this coal-fired capacity.

In both proceedings, the DOE analyses indicated significant sensitivity in the economics of utility operations to increases in the transportation tariffs for coal. In fact, DOE's studies show that because the economics of utility operations are highly complex and interrelated, it is impossible to identify any single point where a utility would switch from a dependence on one fuel to a dependence on another alternative fuel.

That completes my prepared testimony. I would be happy to answer any questions.

APPENDIX

1. Docket No. 36612—Incentive Rate On Coal—Gallup, N. Mex. to Cochise, Ariz.

Rate sought by railroad (filed June 1977)	$8.64
Rate advocated by shipper (Arizona Electric Power Cooperative Inc.)	4.50
ICC decision (November 1977) tariff allowed	8.64

Decision is on appeal before the U.S. Court of Appeals, D.C. Circuit.

2. Docket No. 36608—Incentive Rate On Coal—Cordeno, Wyo. to Smithers Lake, Tex.

Rate sought by railroad	$15.60
Rate advanced by shipper (Houston Power and Light Co.)	11.00
ICC decision (November 1977) tariff allowed	15.60

Decision is on appeal before the U.S. Court of Appeals, D.C. Circuit.

3. Docket No. 3680—*San Antonio, Tex.* v. *Burlington Northern Railroad.*

Rate sought by railroad (filed July 1977)	$18.23
Rate advocated by shipper	9.78
ICC decision (October 1978) tariff allowed	16.12

Decision is currently on appeal before the U.S. Court of Appeals, D.C. Circuit. D.O.E. participated in the administrative proceeding and is party to the appeal.

4. Docket No. 36936—Incentive Rate On Coal—Hayden, Colo. to Kings Mill, Tex.

Rate sought by railroad (filed May 19, 1978)	$10.56
Rate sought by shipper (Celanese Chemical Co.)	6.50–7.00
ICC decision (November 1978) tariff allowed	10.56

Decision is on appeal before the U.S. Court of Appeals, 5th Circuit. D.O.E. has been requested to file an amicus brief, but has not yet decided to do so.

5. Docket No. 37063—Increased Rates on Coal for the L&N Railroad.

Rate sought by railroad (filed November 1978)	38 percent increase on originated coal.
Rate advocated by shippers	Generally between 6–10 percent increase.
Currently pending before the ICC	D.O.E. is party to the proceeding.

Several recent rate increases on coal which have been filed with the ICC:

6. Docket No. 37153—Minnesota Power and Light.

Rate sought by railroad	$9.54
Prior rate	$6.10
Increase (percent)	53

7. Docket No. 68938—Movement to Superior, Wisc. For Detroit Edison.

Rate sought by railroad	$9.82
Prior rate	$6.98
Increase (percent)	41

8. Docket No 36944—Movement to Council Bluff, Iowa for Iowa Power and Light.

Rate sought by railroad	$7.38
Present rate	$5.62
Increase (percent)	24

Senator BENTSEN. Mr. Coleman, Mr. O'Neal, we are talking about making this country of ours energy-independent. I go downstairs to meet the Finance Committee to talk about putting a $142-billion tax on to make us energy-independent. At the same time, I get figures put before me here indicating it's cheaper to bring coal in from South Africa where they have a 300-mile railroad haul, carry it several thousand miles by boat, another 88 miles by railroad and U.S. utilities can buy it cheaper. We're talking about trying to be energy-independent of the OPEC countries, but it looks like what we're doing is just swapping OPEC off for Poland and South Africa.

We have one department over here trying to achieve the energy objectives of the country, and we have the Department of Transportation turning around and making recommendations to the ICC that allow that delivered cost of coal be aligned with the delivered Btu cost of foreign oil.

I really believe if that recommendation was carried out it would be absolutely devastating to the use of coal in this country and in trying to develop energy independence.

Now tell me, are you seriously considering adopting the recommendation of the Department of Transportation on coal-hauling rates?

Mr. O'NEAL. The Department has made that recommendation in a number of cases and we have not bought the proposal yet. I don't think we're likely to. We want to weigh the arguments of it, and certainly of the Department of Energy. Obviously, if the price of coal reaches the same price as the price of oil, there will be no incentive to convert to coal.

Senator BENTSEN. You just heard Mr. Jordan, Houston Lighting & Power, talk about what it was going to cost to convert to coal, how much a kilowatt. An incredible price. You know this administration really better get its act together. It may mean knocking some heads together to achieve a balance of policies.

I'm not going to go down to vote for $142 billion worth of additional taxes unless I see a coordinated effort to achieve the objectives for the country in energy independence. I know we haven't got coordination when I see the dollar going down the tubes, further depreciating, then see a situation where we turn around and substitute foreign coal for foreign oil.

Mr. Coleman, Chairman O'Neal suggested that in the Southwest, coal is still a better buy for the utilities compared to oil and gas. Do you want to comment on that?

Mr. COLEMAN. Yes, I suppose that is true in terms of the present delivered cost of coal. I suppoose coal is in fact less than the average cost of natural gas in Texas, and perhaps less than the Btu equivalent of imported oil.

But the cost of natural gas in Texas has stabilized recently. And under the Natural Gas Policy Act passed by the Congress, its increase between now and 1985 is predictable and the curve doesn't look anything like that chart behind you there. Of course, the utility doesn't

just look at the delivered cost of the fuel itself. If you are talking about the new facility, you have got to reckon with what Mr. Jordan testified to, that the new facility, which burns coal, is going to cost six or seven times what that existing oil or gas facility might have cost, which means that the capital charges must be added to the cost of coal.

And when you look at it that way, it's the judgment that we arrived at in these studies that present rail tariffs are sufficient to cause utility executives to cancel coal-fired plants or to defer them; or if they already have them, to use them less.

Senator BENTSEN. Mr. O'Neal, I was listening to Mr. Jordan make his statement. As I understood it he stated coal freight rate increases of 40 to 50 percent have been approved in recent years without submission of cost data by the railroads. Does that mean that ICC is permitting these increases to go into effect without requiring the railroads to justify them?

Mr. O'NEAL. No, the railroads have to justify the increases with cost data. It is submitted. I don't understand that comment, frankly. In one case now pending——

Senator BENTSEN. I will ask Mr. Jordan to give me substantiating facts.

[The following letter was subsequently received for the hearing record from Mr. Jordan:]

HOUSTON LIGHTING & POWER CO.,
Houston, Tex., July 27, 1979.

Hon. LLOYD BENTSEN,
Chairman, Joint Economic Committee,
Congress of the United States,
Washington, D.C.

DEAR MR. CHAIRMAN: At the hearing on July 24, 1979, on The Impact of Rail Coal Shipping Rate Increases, I testified as follows:

> Rate increases of as much as 40 percent to 50 percent have been imposed by the railroads without the provision of cost data normally required of other regulated industries in ratemaking procedures.

In a subsequent exchange between you and Witness A. Daniel O'Neal, it was stated that substantiating facts for my assertion would be welcomed. The purpose of this letter is to provide those facts.

Until the recent spate of coal rate increase proceedings, the I.C.C. has never employed rate of return principles in the establishment of freight rates. *Ex Parte No. 271, Net Investment-Railroad Rate Base And Rate Of Return,* 345 I.C.C. 55, 61 (1974).

In the recent coal rate increase cases, the I.C.C., for the first time in its history, endeavored to set rates for specific movements which purported to earn for the railroads a specific rate of return. This technique is very clearly set forth on sheet 16 of Witness O'Neal's prepared statement where he shows how the Commission devised the rate to San Antonio to earn 10.6 percent after taxes and before the 7 percent additive for cross-subsidization.

The point I make and here repeat is that there is no data or evidence presented by the railroads on their investment in the facilities used by the San Antonio or Houston traffic, or any other coal traffic. In other regulated industries, such as the electric utility industry, a return is earned on the actual, used and useful investment required to provide the service. The I.C.C. makes coal rates by calculating returns on the entire system investment and then allocating a portion to coal. As such, there is no data before the I.C.C. on how much return coal traffic is earning on the actual facilities which it utilizes.

I am convinced that if the railroad coal rate profits were expressed as a return against the actual investment in the coal facilities, they would be shockingly high. Regrettably, as I have stated, there is no cost data which permits me to demonstrate this thesis.

In closing, let me express my appreciation for the opportunity to testify before the Committee on this very important matter.

Very truly yours,

DON D. JORDAN,
President and Chief Executive Officer.

Mr. O'NEAL. I just mention that in a number of cases we have had fairly lengthy hearings. For example, the Louisville Nashville coal case that is now before us, we have had 30 days of hearings just to develop the record. So I don't really understand that comment.

Senator BENTSEN. Mr. O'Neal, I heard Mr. Coleman say, and the appendix to his prepared statement indicates, that at three recent rail coal hauling rate cases affecting major collective utilities in Minnesota, Michigan, and Iowa, the increases ranged from 24 to 53 percent. That looks like we're talking about another set of ICC approved rate increases which would discourage maximum coal utilization in the Midwest as it has in the Southwest.

Mr. O'NEAL. I'm not going to deny there have been substantial increases in coal. There is no question about it. The railroads are looking in this area as one place they can increase their revenues. I think it's important to note that the price of transportation of coal which at one time on a nationwide basis was about 60 percent of the delivered price of coal and is now 23 percent on a nationwide basis.

Now in the West ——

Senator BENTSEN. Those are not the figures I heard for the Southwest by a long shot.

Mr. O'NEAL. That's right. In the Southwest the percentage is high because you have got a much longer haul in that situation than you do in most other parts of the country, 1,500 mile haul or so.

Senator BENTSEN. As I recall the figure, Mr. Jordan was saying transportation is around 75 percent of the cost of coal delivered to the utility in Houston and San Antonio.

Mr. O'NEAL. I agree. For the western coal moves which are much longer, the price of transportation is substantially higher than it is for other parts of the country. And it's about 70 percent.

Senator BENTSEN. Now, in your prepared statement you said modern eastern coal decisions must now evaluate both the effect of the proposed rate increases upon the existing rate structure and the carriers' need for adequate revenues. Now if I can translate that into layman's terms, it seems to me what you are saying is that many eastern electric utilities and other large coal users can anticipate significant increased coal shipping rates along the same lines as those granted in the West.

Now if that is so, there wouldn't be just two of us sitting up here. This thing would be packed. And you will see some kind of affirmative legislation taking place.

Mr. O'NEAL. Well, I don't see those kinds of large increases occurring. In the East, most of the plant is in place. One of the problems in the West is that the plant has not been in place for hauling these large volumes of coal. However, if a bill that is now pending before the Congress were to pass, it could make a big difference.

There is a bill that would eliminate overall regulation by the Interstate Commerce Commission of rail rates, even for captive shippers. I think if that bill were to pass, although I don't see it really happen-

ing at this stage, it could substantially increase rates. We are opposed to that and we have fought it all the way.

Senator BENTSEN. Mr. Coleman, you stated four principles for balancing national energy goals and national transportation goals. Will you restate those briefly, and then, Mr. O'Neal, I would like you to comment on those proposed principles.

Mr. COLEMAN. These are the ratemaking principles.

Senator BENTSEN. You talk about trying to achieve a balance in national energy policies.

Mr. COLEMAN. That's correct. We recommend an approach where the first question is: What is the incremental cost of the shipment? To make that judgment you must have incremental cost data. I believe that perhaps what Mr. Jordan was referring to is that in some instances, the ICC has not requested incremental cost data and they have accepted filings of system average costs. But we think to make an intelligent judgment. as a first cut, you ought to know what the incremental costs are. That is the way any businessman would look at any new service. Am I going to get enough revenue out of it for the cost I incur?

The second thing you move to is the allocation of fixed costs. Obviously, it's fair that all service pay a portion of the fixed costs as well. Our view there is that you should determine fixed costs according to the ratio of incremental cost to all costs. That requires obtaining some additional information. But it helps the agency and the people involved, the shippers and carriers, to know what the rules of the game are so that they can predict with some certainty the future range of coal tariffs.

Once you have established that, then you face up to this question of differential pricing, which is just another way of saying that the traffic which can bear a higher cost should support that traffic which cannot bear its full share of fixed costs. Frankly, our view is that it's questionable whether a railroad ought to be hauling traffic that doesn't bear at least its incremental costs.

So our view is that if you are going to get into this question of differential pricing, you have got to find out and lay out on the record what the railroad's revenue requirements are. How much money does this railroad need in order to continue operation and to make necessary investments? Then you determine what part of the railroads business cannot bear its full share of the costs. Then you arrive at a number. Then you make a fair allocation of that deficiency which must be recovered from the profitable traffic, fairly amongst that profitable traffic.

Senator BENTSEN. Mr. Coleman, because of the limitations of time and the fact my time has expired, I want to give Mr. O'Neal an opportunity to respond.

Mr. O'NEAL. Well, we would agree that it would be nice, and we are attempting to reach that goal, where we have good, solid cost information on all aspects of a railroad operation. That information is not as good in some instances as we would hope. In some cases we have to rely upon system average costs where we would like to have more specific information. This particularly arises where you have a new service that is being provided where you don't know what those costs are until it's actually been in operation.

We also agree that railroads should not be operated where they are not meeting at least variable or incremental costs. We have been urging the railroads to increase their rates in those areas. Indeed, I'm not sure why they haven't increased their rates.

Senator BENTSEN. Mr. O'Neal, we just had a rollcall. I don't quite understand it. So I would like to let Senator McGovern make his comments in case we have to go over to vote.

Senator MCGOVERN. Thank you, Mr. Chairman.

Chairman O'Neal, I share the concern of the utility officials, Mr. Jordan and Mayor Cockrell and others who have testified here earlier about the skyrocketing transportation costs. We don't have any Burlington Northern coal hauling service in South Dakota. However, the Milwaukee Road does carry very substantial amounts of coal to a huge powerplant in the northeastern corner of the State.

And the Milwaukee rates are much lower than the Burlington Northern's. I think maybe half as much, something on the order of $7 against $14 or $15. The problem is the Milwaukee's gone bankrupt with those rates, and doubtless with other problems.

And I think it's generally perceived in the industry that their very low rate structure is one of the reasons why the Milwaukee is in bankruptcy. Now would you say the Commission's policy of considering the financial condition of the railroad in coal ratemaking is meant in part at least to prevent this kind of financial deterioration of the lines?

Mr. O'NEAL. That is the objective we are trying to reach. I think that is the objective that the 4–R Act requires us to consider. What can we do to insure that the railroads are remaining viable or becoming viable, in some instances. I note the Milwaukee does have low rates. Of course, one reason they have low rates is because their service is not comparable to their competitors in some instances; therefore in order to generate business they have gone to some very low rates.

I'm not sure whether the rate on coal movements by the Milwaukee is comparable to the Burlington Northern rates. Burlington Northern is moving coal a much longer distance. I venture that would have some impact on that rate.

But we are trying to balance these interests by trying to meet the requirement in the act that tells the Commission that we have some responsibility for the railroads having adequate revenues, and at the same time trying to assure that what we are doing is not adversely affecting energy goals of the country.

Senator MCGOVERN. Do I understand, Chairman O'Neal, that the Commission is now in the midst of a study to determine what the coal rates should be, that you are looking at this whole question of the Western States?

Mr. O'NEAL. That's right. We do have a very large study underway, trying to put all the pieces together as far as western coal rates are concerned. Obviously, one of the factors we have got to consider is the impact on energy consumption in the United States.

Senator MCGOVERN. Your prepared statement indicates that coal rates might have been artificially low prior to the 4–R Act. Is it your judgment that most western railroads now fully recover their costs on the increased rates?

Mr. O'NEAL. On the increased rates for coal?

Senator MCGOVERN. Yes.

Mr. O'NEAL. I would say at this stage, for those rates at least that we had to take a look at, yes, we would say that the railroads are recovering to the extent they should.

Senator MCGOVERN. I do not want to be repetitious here, but what is the evidence that railroads are using, if there is evidence, for their new ratemaking freedom to cross-subsidize noncoal operations? That has been a contention, as you know, of the utility companies, that they are being forced to pay coal transportation rates way above what it costs to move the coal, in order to cover other noncoal operations.

Mr. O'NEAL. Well, we agree. In fact, part of the formula we have used in these two major cases, *San Antonio III* and *SWEPCO*, provides for differential pricing or cross-subsidy to some extent. The carrier is recovering more than fully allocated costs. That is being used to sustain the entire system. But when we look at, as I mentioned earlier in the statement, when you look at the ratio of revenue from coal movements to variable cost, and you look at some other commodities that are moving, coal is not that far out of line.

Indeed, there are many commodities that are substantially higher than coal. Now in the *San Antonio III* case, which is the last case, the revenue is 176 percent of variable cost. And in the *SWEPCO* case, 170 percent of variable cost.

If you look at the charts in the back of the prepared statement, there are a number of commodities. In many, such as iron ore, newsprint paper, locomotive and railway car parts as I mentioned earlier, substantial amounts of traffic are moving at well over 180 percent of variable cost.

Senator MCGOVERN. So they are making more money on those things than they are on the coal. What about grain? Is it true that the railroads make more money moving wheat and grain than they do coal?

Mr. O'NEAL. It depends on the movement. We have a recent study which shows that grain is very competitive in some instances, with a lot of grain that is moved by truck and barge. In other areas it's not competitive at all. Certainly where in the Midwest, where you don't have water movements, and you are a good distance from the market, the rail rates are substantially higher.

So it depends on which movement you are looking at. You can't really make a blanket statement about grain nor can you make a blanket statement about coal movements. They vary all over the country.

Senator MCGOVERN. This next question might go to both Mr. Coleman and Mr. O'Neal. I thought the chairman made a point that a good many people in the Senate here are feeling stronger about all the time. And that is the importance of seeing the relationship between the various parts of our energy policy more than we do.

I, frankly, for example, don't understand at a time when we are trying to conserve energy that we cut back on public support for the Amtrak system, where you have these trains running full. And we are trying to encourage people to leave their cars at home. And you see substantial cutbacks, supposedly for budget reasons, on Amtrak.

Without getting into that question at this hearing, is there, Mr. Coleman, a really serious and sustained effort to coordinate the vari-

ous aspects of our energy policy? Now, the utility companies argue that while they have no quarrel with the idea of converting to coal, and they have no quarrel with the idea of a strong railway industry, and I think most Americans would strongly support those two objectives, that if in order to accomplish that the rates have to be set at a very high level, in a sense you are asking electric consumers to subsidize the rail lines.

Now, if that is the case, is there any thought being given to maybe part of that cost being picked up out of the energy program? The chairman made reference to the proposal that we spend $142 billion on our energy policy over the years ahead.

Is there any reason to think that a logical case can be made that some of that cost of moving coal to permit a more intelligent energy policy could be picked up as a public cost rather than shifted entirely to the utility consumers?

Mr. COLEMAN. That is a very good question. In the administration's most recent proposals we are talking about $16 billion of that $140 billion plus being used for transportation improvements and about $10 billion of that would be for purchase of bus systems and the upgrade of existing rail mass transit systems.

There is no reason why that question should not be addressed in the broader context which you raise. The Amtrak decision is one that, as you say, raises an interesting question at a time when we are trying to get people out of their automobiles and into public transportation.

In terms of the effort to coordinate these things, which I think is a very basic question here, there is, of course, nothing in the Constitution that requires the Congress to have consistent goals every time it passes a law. The Department of Transportation and the ICC are set up in business under the 4–R Act and the Department of Energy is set up in business under all of our statutes. Occasionally, those objectives are going to conflict. The only place that coordination can be supplied is at the White House. We have raised those issues at the White House. They are now being looked at. One instance in which I think we have come to a conclusion is that the administration has decided to support coal slurry pipeline legislation, and support it actively, because we think it is one method of providing some competition to the railroads.

There are problems, that I know that you are acutely aware of, with respect to water use in the West.

Senator MCGOVERN. I was going to say that I'm not sure that is a very happy position.

Mr. COLEMAN. I understand it is another of those instances where we have two policies conflicting. Another thing that is going on right now is the Justice Department is reviewing the positions of the ICC, the Department of Transportation, and the Energy Department with an eye to stating a position of the United States at the court of appeals where the *San Antonio* case is pending. We expect a decision to be made on that shortly.

Senator MCGOVERN. Thank you. I see my time is up, Mr. Chairman.

Senator BENTSEN. Thank you very much.

Thank you, gentlemen, for your statements.

Mr. O'NEAL. Thank you.

Mr. COLEMAN. I appreciate it.

Senator BENTSEN. Our next panel will be composed of Mr. Norman Lorentzsen, president and chief executive officer of the Burlington Northern, St. Paul, Minn.; and Mr. Richard Miller, executive vice president of the AMAX Coal Co., Indianapolis, Ind.

Mr. Lorentzsen, if you will proceed with your statement.

STATEMENT OF NORMAN M. LORENTZSEN, PRESIDENT AND CHIEF EXECUTIVE OFFICER, BURLINGTON NORTHERN, INC., ST. PAUL, MINN., ACCOMPANIED BY FRANK S. FARRELL, VICE PRESIDENT-LAW

Mr. LORENTZSEN. Thank you very much, Mr. Chairman, Senator McGovern. I have with me Mr. Frank S. Farrell, our vice president-law.

I have an oral statement and I will try to stay within 10 minutes.

I am Norman M. Lorentzsen and I am president and chief executive officer of Burlington Northern, Inc., the Nation's largest railroad in terms of trackage. My business address is 176 East Fifth Street, St. Paul, Minn.

I deeply appreciate the opportunity to appear before you today. I consider it most appropriate that the railroads are a part of any discussion of our Nation's commitment to coal because no industry has done more in tangible, measurable expenditures and services to demonstrate its willingness to support the national commitment to coal. Further, no railroad has done more than Burlington Northern.

In filing your committee's 1979 Joint Economic Report with the Senate, Senator Bentsen stated:

> * * * expanding the capacity of the economy to produce goods and services efficiently is the most effective policy to combat the major economic ill of our time—stagflation.

We agree with the committee and we have made a commitment to expand and increase the capacity of Burlington Northern to handle western coal in an effort to meet our Nation's critical energy needs.

It is ironic that despite our commitment and the heavy expenditures we have made, the railroads find themselves in a position of having to defend their actions before the very people who have been the beneficiaries of this commitment; namely, the customers who enjoy the expanded service and certain local and national leaders who first called for such a commitment from the industry.

The letter I received from your chairman concerning this hearing stated that it would deal with—and I quote—"conflicting national policies pertaining to energy and rail transportation." Gentlemen, my message to you today is: There are no conflicts between the goals of the American rail industry and a sound national energy policy. Without a viable rail industry, this Nation simply cannot have an effective energy policy. Moreover, it will not be able to utilize the abundant coal reserves that grow more important with each increase in the price of crude oil that is imposed upon us by the OPEC oil cartel.

In the past 5 years, Burlington Northern has invested more than $665 million for roadway and rolling stock for coal service. We have made these investments at a time of skyrocketing increases in costs. In the 5-year period from 1979 through 1983, Burlington Northern

plans to invest more than $1.5 billion in coal-related facilities and equipment.

I do not believe that anyone could accurately estimate the tremendous economic impact of the OPEC oil crisis of 1973–74 or the serious inflation which has occurred in its wake. Burlington Northern, along with the rest of the country, has felt the severe impact of this rampant inflation.

Since 1972, the average price of a locomotive has doubled to approximately $706,000. Steel rail has gone from $160 to $387 per ton. The price of diesel fuel has increased almost tenfold in the past 6 years and averaged 97 cents per gallon in the spot market as of the last week of June 1979.

In approaching our customers and attempting to negotiate higher rates, Burlington Northern has reflected in these rates the increased expenses and the incremental investment associated with the handling of coal, including a realistic cost of capital. We also have been very much aware of the costs of competing forms of energy.

The Interstate Commerce Commission has been reluctant to fully recognize incremental coal investments in plant and locomotives in costing coal traffic, and has refused to recognize Burlington Northern's current cost of capital in determining the costs of handling coal.

Cost of capital is as unavoidable a cost as wages or fuel. If a company fails to pay labor, nobody will work for it. If a company fails to pay capital, the market will not provide the funds necessary for replacement, maintenance, and improvements of plant and equipment.

The Nation's railroads have long suffered from inadequate earnings and unfortunately Burlington Northern is no exception. Burlington Northern's rate of return on its rail operations in 1978 was only 1.60 percent despite large increases in our traffic. This after-tax return is more than 10 percentage points less than the after-tax cost of capital to Burlington Northern. The return on equity of the Nation's leading utilities last year ranged as high as 20.1 percent and averaged 12.2 percent. On the other hand, Burlington Northern's consolidated return on equity from all operations was only 6 percent.

It must be recognized that coal rates are less than the average rate, in terms of rate-to-cost relationships, which is applicable on all of our traffic; that earnings per ton-mile on coal traffic moving in unit trains are about one-half the average of all Burlington Northern's traffic; that the returns we earn are far less than the returns that electric utilities are permitted to earn, and that our ability to compete with electic utilities in the financial markets depends on whether we can achieve adequate earnings. As I view the 4–R Act, it sets forth a positive mandate to the Commission to place the railroads on an equal footing with the rest of American industries in providing us with an opportunity to recover our operating expenses and a reasonable rate of return. The 4–R Act has been of some assistance to Burlington Northern and the industry in meeting its overall revenue needs.

We do not believe that the electric utilities of this Nation, with the rates of return they achieve, require subsidization by the railroad industry or by the taxpayers of this country.

Coal is clearly the Nation's best energy buy, and the A. D. Little study which I cited in my prepared statement concludes that Western

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unit-train coal rates as much as 30 percent higher than those recently implemented would have little or no effect upon the extent to which Texas utilities or others would have any economic incentive to convert from coal to another fuel.

In our view, the national energy policy not only supports, it mandates approval of the rates we have sought. The national energy policy requires the increased use of coal. This objective can be achieved only if the railroads are able to haul coal in increasingly large volumes. We will not be able to do this job unless we earn a fair return, one which enables us to attract capital, just as electric utilities and other industries are able to attract capital in the private sector. We have established, and are establishing, coal rates which will permit us to accomplish this critically important objective.

If we are disabled or precluded from earning a fair rate of return by unduly restrictive regulation or other means, we simply will not be able to make the investments needed to revitalize Burlington Northern; we will not be able to handle the large volumes of coal as efficiently as we should—if we can handle it at all—and the national energy program will suffer.

Thus, in a very direct and immediate sense, the viability of the Nation's railroad system—and in particular the Burlington Northern and other Western railroads—is one of the keys to the solution of the Nation's energy needs.

We understand this committee is also interested in securing the company's views on legislative changes which would be of benefit to the railroad industry. Accordingly, I offer the following recommendations:

One, Burlington Northern strongly supports recent proposals to permit businesses to obtain faster writeoffs or depreciation of new investments in buildings and equipment over 3 to 10 years while retaining full investment tax credit. We believe that such changes will provide more capital to modernize American industry.

Two, for years, Burlington Northern, along with the rest of the railroad industry, has supported the imposition of adequate user charges on barges and motor carriers to compensate the public for the facilities utilized by barges and trucks. There is no reason why the general taxpayer should be required to subsidize our competitors to the detriment of both the taxpayer and the railroad industry.

Three, Burlington Northern supports the concept of a refundable investment tax credit to assist capital intensive utilities and industries to fully utilize the benefits of investment tax credit. Alternatively, unused investment tax credit could be applied to satisfy other Federal taxes.

Four, Burlington Northern supports the concept and application of workmen's compensation principles, rather than the Federal Employers' Liability Act, which is based upon negligence, to the railroad industry. Application of such a law to the railroads would insure the right of employees to fully recover for injuries incurred, with a minimum of administrative costs and attorneys' fees.

Five, Congress is considering changes in the social security system to insure its integrity. In this regard, we would encourage legislation which would assist the railroad industry to meet the deficit in the

railroad retirement fund. We have taken steps to expand piggyback and other intermodal transportation of freight. In order to encourage these efficiencies, we need legislation which would insure that nonrailroad employees engaged in intermodal transportation would remain subject to social security rather than railroad retirement.

In conclusion, we expect this year Burlington Northern will originate an excess of 78 million tons of coal, compared with 63,100,000 tons last year. Despite a rate of return from our rail operations of 1.6 percent last year, we have had the courage and confidence to expend in excess of $665 million through 1978 and plan to expend $1,500 million through 1983 to handle Western coal.

To fund these investments, it is essential that the company be permitted an adequate rate of return. I submit that the company's objective of seeking a reasonable rate of return, in an effort to improve its overall efficiency and contribute to solving the Nation's energy crisis, is clearly in the national interest, mandated by the 4R Act, consistent with the objectives of this committee, and of benefit to every American.

Thank you.

Senator BENTSEN. Thank you.

[The prepared statement of Mr. Lorentzsen, together with exhibits, follows:]

PREPARED STATEMENT OF NORMAN M. LORENTZSEN

Mr. Chairman and members of the Joint Economic Committee: My name is Norman M. Lorentzsen and I am President and Chief Executive Officer of Burlington Northern, Inc. My business address is 176 East Fifth Street, St. Paul, Minnesota 55101.

I deeply appreciate the invitation to appear today before this Committee and to demonstrate the extent of Burlington Northern's commitment and participation in the burgeoning movement of Western coal; the tremendous capital requirements and risks which we have assumed to meet this commitment and to assist in supplying the current and future energy demands of this Nation, and our ability to meet future tonnage requirements resulting from the increased demand for coal. In addition, it affords Burlington Northern the opportunity to clarify any apprehension this Committee may have with respect to Burlington Northern's objectives regarding its coal rate policies.

Recently, this Committee, through its pathbreaking annual report and the related comments of its members, has pointed the way for Congress and the President to beat the "stagflation monster".

The Joint Economic Committee recognized that in the past, recessions were fought by hyping up demand. More money was printed so people could spend more. Each recession ended with a larger Federal debt burden and more numerous Federal spending programs. Tax, inflation, unemployment and debt burdens on the private economy have stifled incentives to work, save and invest. As we hyped demand, we strangled supply. Each recovery became progressively weaker with higher basic inflation rates, higher basic unemployment rates and lower potential growth rates.

We need a renewed commitment to rebuilding America's industrial base, upgrading the transportation system, developing new sources of energy and increasing basic research and development. We should erect modern facilities and fill them with the most efficient machinery that technology can provide. The Committee has properly recognized that the United States must either rebuild its industrial base or settle for a lower standard of living.

You have committed yourselves to developing the supply side of our economy. As Senator Bentsen said in filing the Committee's 1979 Joint Economic Report with the Senate, " . . . [E]xpanding the capacity of the economy to produce goods and services efficiently is the most effective policy to combat the major economic ill of our time—stagflation".

Burlington Northern agrees with the Committee. We are making, as my testimony will show, a truly unprecedented effort to rebuild and expand our railroad to meet the Nation's going transportation needs. All we ask is the opportunity to earn a reasonable rate of return on our transportation operations so that we can fund these essential expenditures through private financing rather than at the taxpayers' expense.

Fortunately, the national policy designed to improve this country's rail transportation system as set forth in the 4–R Act of 1976 [1] will help to lessen our dependence on the OPEC oil cartel. The railroads must become stronger if the industry is to meet the demands of public utilities for coal transportation service. Moreover, because coal is a cheaper energy source than oil, every ton of coal the railroads haul displaces more expensive foreign oil and helps in our Nation's fight against inflation.

While some utilities have objected to paying higher transportation rates, these higher rates are fundamentally cost-based. No fair-minded person should ask Burlington Northern or any other railroad to haul coal at rates below the full cost of providing such service. Viewed from this perspective, Burlington Northern's recent program to improve its coal rates will permit us to meet our shippers' demands for transportation services and will permit those shippers to burn a lower cost fuel.

Increased coal tonnage has required us to invest hundreds of millions of dollars in new capacity—including new fixed plant assets and rolling stock. We are making these investments at a time of skyrocketing increases in costs. I will describe how Burlington Northern has attempted to adjust rates for the transportation of coal to reflect these economic realities. I will also deal with the effect of the 4–R Act of 1976 upon the Interstate Commerce Commission's assessment of these rate increases.

In summary, my view is that the Commission's assessment has not been satisfactory—in part, because of its tendency to look at historical as opposed to current or prospective costs, and partly also because it has failed to properly balance the short-term interests of consumers in lower rates against the long-term interests of the Nation in a viable and financially revitalized railroad system. This imbalance is illustrated by the fact that coal rates prescribed by the Commission bear rate-to-cost ratios substantially lower than rates on movements of Eastern coal, and the further fact that the prescribed levels of rates on certain movements have failed to cover all railroad costs, including capital costs.

I. INTRODUCTION

Burlington Northern Inc., the Nation's longest railroad, was formed in March, 1970, by consolidation of five predecessor companies. The Company and its subsidiaries operate more than 25,000 miles of lines in 19 Western and Midwestern States and two Canadian Provinces and employ over 48,000 people. The attached map of the United States, marked Exhibit 1, displays our lines.[2]

The three principal predecessor companies; namely, the Chicago, Burlington & Quincy Railroad Company, Great Northern Railway Company and the Northern Pacific Railway Company, were primarily constructed as granger railroads serving the gain producing areas of the West and transporting grain and grain products, lumber, livestock and products of mines to Eastern manufacturing and consuming areas. While our plant facilities are entirely adequate for furnishing these traditional and historical services, substantial adjustments were required to efficiently transport coal and make it economically attractive and competitive with other energy forms. Because of the potential demand for coal and the massive volumes required, the Company gave early consideration to restructuring the existing plant and operations to accommodate coal.

In the early 1970's, my company foresaw the developing energy crisis and resolved to do its part to meet the Nation's increasing energy needs. The predecessor companies of Burlington Northern were the first to establish a unit train coal movement, which is a particularly efficient method of transporting large volumes of coal. The first long distance unit train movement involved transportation of coal from Colstrip, Montana, to a public utility at Cohasset, Minnesota. The unit train concept required consideration of improving track structures to accommodate the heavy loads and dynamics associated therewith, as well as additional yard and passing tracks to provide additional capacity and expedite coal move-

[1] Railroad Revitalization and Regulatory Reform Act of 1976, Public Law 94–210, effective Feb. 5, 1976.

[2] Exhibit 1 may be found in the committee's files.

ments. Improvements in locomotive power were required. The concept of continual movement of coal trains through loading and unloading facilities was started. In short, the physical plant and facilities required adaptation. This has been and still is a massive undertaking and a challenge to private initiative and enterprise which we have willingly undertaken and which has been endowed with private capital from external as well as internal sources.

Burlington Northern's decision to commit its resources and capital to the movement of coal has involved difficulties. While we foresaw the potential demand for coal, it was difficult to make an accurate estimate of the magnitude of this demand. Nevertheless, Burlington Northern has wholeheartedly committed itself and its resources to assist in the resolution of what is now recognized as an extremely serious national energy crisis. One, of course must look at the situation as we foresaw it in the early 70's. The commitment to risk huge amounts of capital investment in the movement of coal must be viewed in the light of the then existing intense competition from oil, gas and nuclear energy; the potential of coal slurry pipeline competition and competition from other railroads and sources of coal, as well as the overall financial position of the railroad industry, and Burlington Northern in particular. I do not believe that anyone could accurately estimate the tremendous economic impact of the OPEC oil crisis of 1973–74 or the serious inflation which has occurred since 1974. My company, as well as other enterprises, has had to adjust its original planning to meet the acute post-OPEC inflationary problems.

II. BURLINGTON NORTHERN COAL MOVEMENTS

Approximately 90 percent of the coal traffic originating on Burlington Northern occurs in Montana and Wyoming and is destined for electric generating stations in the Midwest, the Great Plains and the Southwest. Most of the coal which is mined or planned for mining in Montana and Wyoming lies in the Fort Union Formation. The attached map, marked exhibit 2, indicates the location of Burlington Northern's lines in relation to existing mines and mines under construction or projected in the Fort Union Formation. The balance of the coal traffic originated by Burlington Northern comes from mines in the Midwest and North Dakota. This coal movement has been relatively stable since the beginning of the decade.

The transportation of coal has become Burlington Northern's largest single source of rail transportation revenues. Since 1972 our coal traffic has increased by 375 percent. The following table shows the huge increase in the total number of tons of coal originated for the most recent five-year period, the number of revenue ton-miles attributable to coal, and the number of coal unit trains originated daily.

	Year ended Dec. 31—				
	1974	1975	1976	1977	1978
Tons of coal orig'd (in millions)	29.5	36.2	42.9	50.6	63.1
Coal rev ton-miles (in billions)	18.4	26.2	32.1	42.6	52.7
Daily unit trains orig'd at end of year	8	10	12	14	17

In projecting BN's capital expenditure requirements for the 1979–1983 period, we have made projections of anticipated coal traffic during that period. We estimate that in 1979 the Company will originate 78 million tons of coal and that in 1983 it will originate from 115 million to 140 million tons. This translates to 65 billion revenue ton-miles in 1979 and from 90 billion to 115 billion in 1983.

III. THE IMPACT OF THE ENERGY CRISIS AND INCREASED COSTS ON COAL RATES

A number of the present coal rates, as well as prospective coal rates, were negotiated with utilities in the early 1970's. These earlier negotiated rates failed to reflect the very substantial increases in operating expenses and the increased capital costs of coal-related investments since the OPEC crisis. The rapid inflation which has occurred since 1974 has had a serious impact upon both operating costs and expenses and upon the investments in capital assets.

In 1972, the average price of a diesel electric locomotive used in hauling coal was $334,206. Our current average price is approximately $706,000. In 1972, stand-

ard carbon steel rail cost $160 per net ton. Today that same rail costs $387 per net ton. Additionally, much of the rail being relaid on primary coal routes is 132-pound rail and replaces rail which is inadequate to consistently handle heavy coal tonnages. Hardwood crossties have increased in price over 300 percent in the last ten years from $3.05 in 1968 to $10.31 today. The price of diesel fuel has increased almost tenfold in the past 6 years—from 10.5 cents per gallon in January, 1973, to 55.6 cents per gallon and now averages 97 cents per gallon in the spot market as of the last week of June, 1979. The average hourly wage for Burlington Northern employees has gone from $6.17 per hour in 1972 to $10.40 per hour in January, 1979. The price of coal cars has increased from an average of $15,389 per car in 1972 to $36,750 per car as of June, 1979.

Translated into total dollars, the following table shows the substantial increases in railway operating expenses and fixed charges which have occurred since 1972 when Burlington Northern was negotiating and establishing rates for prospective future movements:

Year	BN System rail operating expenses	BN System fixed charges
1972	$1,008,423	$51,712
1974	1,280,155	58,314
1977	1,741,471	68,103
1978	2,026,818	73,577

It is quite obvious that rates which may have been adequate in the early 1970's for such coal traffic must now be reconsidered in the light of these increased costs and our need to raise very large amounts of capital for investment in coal-related plant and equipment.

In determining our coal rates, we have allocated the costs on the basis of projected future tonnage for each customer. Burlington Northern is, therefore, foregoing a portion of its increased operating costs and capital expenditures pending movement of the future tonnages. Hence, any reduction or diminution in such future tonnages occasioned by competitive diversions to other lines or coal slurry pipelines could require a further upward adjustment in our coal rates. It is Burlington Northern's policy that coal should "stand on its own wheels" and bear the expenses and capital costs related to such movements.

Burlington Northern has expended approximately $326 million in roadway capital improvements from 1974 through 1978 to handle coal. These investments include the cost of new lines, additional main tracks, sidings, line changes, 182 miles of yard tracks, 480 miles of centralized traffic control and the capitalized portion of the cost of relaying 1,351 miles of existing track with heavier rail.

In addition to the above roadway caiptal improvements, Burlington Northern during the same period acquired the following additional equipment for coal:

	Year ended Dec. 31—					
	1974	1975	1976	1977	1978	Total
Locomotives	60	30	75	123	156	444
Coal cars	400	1,000	550	500	845	3,295
Cabooses	18	10		29	32	89
Total cost (in millions)	$32.3	$38.5	$52.6	$88.8	$127.0	$339.2

Projected coal-related roadway expenditures [3] for the five years ending December 31, 1983 are as follows:

	Year ended Dec. 31—					
	1979	1980	1981	1982	1983	Total
Track miles of rail relay (new and secondhand)	448	520	497	459	427	2,351
Track miles of continuous welded rail included above	443	520	492	454	422	2,331
Miles of new track and sidings	204	113	51	36	38	442
Track miles of new centralized traffic control signaling systems	131	383	226	408	188	1,336
Total cost (in millions)	$166.1	$185.9	$154.5	$167.0	$134.1	$807.6
Amount capitalized (in millions)	$105.3	$109.9	$77.7	$89.5	$59.0	$441.4

[3] Estimates of coal-related expenditures for the years 1979–1983 contain cost escalations which are believed to be sufficient to cover future inflation.

The largest single coal-related project is construction of approximately 116 miles of new line between Gillette and Orin, Wyoming, to serve mines in the area. Construction of the line is continuing and the final 85 miles will be operational in late 1979. Total cost of the line is estimated to be $110 million.

During this same period, increased coal traffic will require this purchase of the following equipment:

	Year ended Dec. 31—					
	1979	1980	1981	1982	1983	Total
Locomotives	215	158	120	208	157	858
Coal cars	700	400	200	200	200	1,700
Cabooses	43	31	15	41	24	154
Total cost (in millions)	$179.1	$127.9	$99.0	$177.9	$144.7	$728.6

From 1979 through 1983, Burlington Northern plans to expend $1,536,200,000 for equipment and roadway to handle coal. During the past five years we expanded $665,200,000 for equipment and roadway, or a grand total of $2,201,400,000 for the ten-year period. In the light of these expenditures, we have no alternative except to set our coal rates at a level which will enable the Company to earn an adequate rate of return in order to fund these tremendous capital investments. These heavy expenditures to meet the Nation's energy needs become even more impressive when you consider that the income of the railroad before income taxes during the last five years totalled only $55,127,000, or an average of $11,025,400 per year. Unless the coal rates provide an adequate return, Burlington Northern will simply not be able to raise the necessary capital to fund such investments.

IV. COAL RATES MUST COVER THE COST OF SUCH TRAFFIC AND BE PROFITABLE ENOUGH TO INSURE ACCESS TO CAPITAL MARKETS

The Nation's railroads have long suffered from inadequate earnings. Unfortunately, Burlington Northern is no exception. BN's historically inadequate revenue levels and earnings make it extremely difficult for the Company to meet the huge capital demands placed upon it by the movement of this coal. While BN has been successful to date in meeting these heavy demands, it is imperative that our earnings be substantially improved to insure our access to external capital sources, thus permitting us to assist in resolving the energy crisis by transporting this coal.

Exhibit 3 attached shows Burlington Northern's net income from all sources for the last five years. You will note that while 1978 was our best year, our rate of return on net railroad investment (ICC basis) was only 1.6 percent. If we include all operations, rail and non-rail, the total corporate return on equity in 1978 is still only 6 percent, largely as the result of the inadequate return on rail operations. This compares with a rate of return for the entire railroad industry last year of 1.6 percent, the fourth consecutive year in which the railroad industry failed to exceed a return of 2 percent.

Exhibit 4 shows the contributions to profit by BN's various lines of business. The net operating income for the railroad peaked with $95.2 million in 1974, dropped sharply in 1975, improved slightly in 1976, dropped again in 1977, and then rebounded in 1978 to $83.5 million. Unfortunately, the 1978 level was still well below that of 1974.

An even more dismal story is told by income before income taxes for the railroad. In 1977, BN's railroad lost $10.7 million. In 1978, BN's $9.1 million pre-tax railroad income was less than one quarter of 1974's $36.9 million, even without considering the shrinking value of the dollar. Further, this very modest 1978 income was obtained from 116.3 billion revenue ton-miles, while the 1974 income was achieved on only 81.3 billion revenue ton-miles. The Company's overall improvement in 1978 net income as compared with 1974 net income came from inflation and BN's other lines of business, not BN's railroad operations.

Despite the expectations of industry analysts and investors that BN's improved financial performance should come from its railroad, that line of business still produced only 7.40 percent of our income before income taxes—92.60 percent came from our nonrailroad lines of business (Exhibit 5). We have been borrowing money on the promise of improved future railroad earnings, and unless that

promise soon becomes a reality, BN will have great difficulty in further debt or other financings.

Present railroad profitability is unreasonably low, and this includes and reflects the performers of our coal traffic which today is nearly one-half of BN's total ton-miles of traffic. Exhibit 6 shows BN's' rates of return for 1975 through 1978, as well as comparative figures for the railroad industry, total manufacturing and all industries. Our rates of return have been dangerously low. In 1978 our after-tax return of 1.60 percent on rail operations was more than 10 percentage points less than the after-tax cost of capital to BN, which is now in the range of 12–13 percent Inadequate BN profitability and our resulting inability to provide common shareholders with sufficient returns have foreclosed BN from the common equity markets—which is the same plight all railroads have found themselves in for decades. Financial consultants have indicated, and I concur, that our cost of equity is in the range of 15–16 percent after taxes. Returns of that level are required if Burlington Northern is to obtain access to the common equity markets.

Debt financing is limited by the value of bondable assets remaining and the high cost and limited availability of subordinated debenture financing requiring no collateral. Exhibit 7 indicates that in nine of the past 21 years there were so new issues of railroad bonds for the entire industry, thus indicating the greatly restricted availability of such financing.

Rating agencies study protective provisions in bond indentures, collateral, coverage ratios, capitalization ratios, liquidity ratios and other financial data. Lower ratings might result from inordinate reliance on debt and the concomitant downward pressure on financial ratios. Exhibit 8 indicates the importance of maintaining at least an A bond rating. Very little debt capital is available to corporations maintaining less than an A bond rating, and such debt capital has a higher cost than higher-rated debt.

Our five-year capital expenditure program is being financed with a disproportionate amount of debt. This will apply pressure to the debt side of our debt-equity ratio. This pressure must be offset by adequate increases in BN's internal generation of equity funds.

In the last few years we have been able to complete principal portions of the financing program outlined in our public disclosure documents. In 1977, we completed placement of a $100 million 5.7 percent convertible preferred stock issue. This past year we placed approximately $340 million of equipment and facility financings. We also completed a private placement transaction involving $50 million of Consolidated Mortgage 9¼ percent Bonds. Inadequate future profitability would seriously endanger the continued success of our financing and construction programs.

During the five-year period, 1979–1983, $2.7 to $2.9 billion will be devoted to capital investments. Up to $1.3 billion of this will be related to currently anticipated coal traffic volume increases. In addition to these capital investments, approximately $2.6 billion will be incurred for maintenance of way and structures operating expenses during the same period. Our earnings performance will be a critical determinant of our ability to raise the necessary capital.

V. COAL RATES AND THE 4–R ACT

It is obvious from what I have previously said that the substantial increases in operating costs, expenses and capital expenditures have necessitated an upward revision of Burlington Northern's coal rates above the levels the BN originally anticipated in the early 1970's. Burlington Northern has not relished the necessity of approaching some of its customers for increased rates, but the economic facts of life have rendered it necessary.

In approaching our customers and attempting to negotiate higher rates, BN has reflected in these rates the increased expenses and the incremental investment associated with the handling of coal, including a realistic cost of capital. Also, we have been very cognizant of the costs of competing forms of energy.

In certain instances, however, the Interstate Commerce Commission has prescribed rates which are lower than the maximum reasonable level. As this Committee is undoubtedly aware, litigation has ensued with respect to rates which we sought to establish for the account of some shippers.

Our specific disagreement with the Interstate Commerce Commission rests primarily upon the Commission's reluctance and refusal to fully recognize all incremental coal investments in plant and locomotives in costing coal rates, as well as its refusal to recognize Burlington Northern's current cost of capital in determining the costs of handling coal. In the first *San Antonio* coal case in Octo-

ber, 1976, the Commission prescribed an extremely low rate which, in essence, was based on historical costs. We have been struggling to overcome that initial ruling ever since. That struggle was enhanced because opposing cost personnel, steeped in the Commission's historical costing methodology. sought to rely on historical costs to keep the rate unduly depressed. Fortunately, I feel that there is now a recognition by the Commission of the fact that the Burlington Northern is, in effect, building a new railroad for coal and that the additional investments required for coal movements are incorporated in part in the Commission's cost analyses. The utilities themselves recognize that we, as they, must incorporate in our investment base any new capital investments and expenditures which are incremental to the handling of coal. Likewise. they recognize that Burlington Northern's cost of capital is not much different from theirs.

However, the recent decisions of the Commission have recognized the fallacy inherent in using an embedded cost of 5 to 6 percent for capital and have allowed 10.6 percent as the cost of capital. While this is a step in the right direction, it still does not permit the Company to recover its current cost of capital which is 12.5 percent. The Commission has also refused to recognize the incremental expenses associated with coal in their entirety, although in *San Antonio III* the Commission admitted that its arbitrary reduction of 30 percent in capital investments for coal was in error. Similarly, the Commission's reliance on historical or average costs results in a gross economic understatement of BN's locomotive investment. For example, even though our current locomotive acquisitions average $706,000 per unit, the Commission's average costing of our coal fleet results in an average value of less than $450,000 per unit. At the same time, the Commission refuses to provide an adequate allowance for locomotive spares and depreciation. The Commission has allowed only 8 percent for spare locomotives, while BN's time and motion studies have documented more than 30 percent as a proper spare margin ratio for locomotive acquisitions. Depreciation, for example, is predicated on a 23-year life, which is based on historical system locomotive fleet depreciation. Our system fleet locomotive averages somewhat in excess of 60,000 miles per year while a coal-assigned locomotive averages in excess of 90,000 miles per year. It seems obvious to us that the depreciable life of coal locomotives will be substantially less than the historic life of a system locomotive, a fact which we have stressed to the Commission but without results to date.

Finally, because of the track dynamics associated with heavy unit train movements, BN experiences greater costs for maintenance, well above its past historical experience. Nevertheless, the Commission has steadfastly refused to make any allowance for added maintenance costs resulting from coal movements notwithstanding BN's evidence showing that it will experiece $110 per million gross ton-miles (about 11 cents a ton) in additional maintenance expense due to coal movements. I would trust that eventually economic reality will prevail and that the Interstate Commerce Commission will ultimately recognize the merits of our position. In the meantime, this creates great uncertainty in the establishment of appropriate rate levels for his traffic.

It should be noted that coal rates are less than the average rate (in terms of rate-to-cost relationships) which must be allowed on all of our traffic in order to achieve adequate earnings as mandated by the 4–R Act. Moreover, the returns that Burlington Northern earns are far less than the returns that electric utilities are permitted to earn, even though we must compete head-to-head with electric utilities in the financial markets for investment funds.

One question which the Committee may be interested in is what difference the 4–R Act has made in the Commission's review of coal rates proposed by the carriers. I believe that the Interstate Commerce Commission would have approved significant increases in coal rates even without the 4–R Act of 1976. The increased costs and expenses incurred by BN for the movement of coal coupled with the massive incremental investments for the transportation of that commodity would, in my opinion, have made it absolutely mandatory for the Commission to approve rates for the movement of Western coal higher than those which BN originally quoted in the early 1970's. As a result of our testimony in a number of proceedings, the Interstate Commerce Commission is fully aware of the massive investment and increased operating costs which Burlington Northern has incurred.

However, the 4–R Act has been of substantial assistance to Burlington Northern in meeting its overall coal revenue needs. The 4–R Act sets forth a positive mandate to the Commission to place the railroads on an equal footing with the rest of American industries in providing it with an opportunity to recover our operating expenses and a reasonable rate of return.

The primary purpose of the 4–R Act is to promote the revitalization of our country's railroad industry. As a result of this Act, steps are being taken to remedy the industry's major problems, including the nagging inadequacy of financial resources for improving and modernizing rail facilities.

Section 205 of the 4–R Act, the new Rule of Ratemaking,[4] directs the Commission to make a continuing effort to assist the railroads to establish revenue levels that are adequate to cover total operating expenses, including depreciation and obsolescence, plus a reasonable and economic profit on capital employed in the business to permit the raising of needed equity capital and to cover the effects of inflation.

Revenue levels and resulting returns must be high enough to support the existing capital structure and attract new equity and other capital to support the outlays which are necessary to provide a sound transportation system. In Ex Parte No. 338, the Commission stated, "We construe the Congressional view to be that the achievement of adequate revenue levels by the railroads would be in the interest, not only of the carriers, but also of the shippers and the public." [5]

The 4–R Act has focused regulatory attention upon assisting carriers in attaining adequate revenue levels. Past failure to balance properly carriers' needs with those of shippers has financially weakened the railroad industry. Rate regulation consistent with 4–R Act requirements will enable Burlington Northern to meet the energy crisis-induced transportation demands of coal shippers.

The public interest requires that rate levels for coal transportation services to Texas and other states fully reflect all costs incurred, including current capital costs and current operating costs. Failure of the Commission to approve the rates proposed by the railroads will render additional coal-related investments at planned levels unprofitable and/or impossible. No well-managed company can make financially unsound investments to the detriment of investors who have entrusted funds to its stewardship. Furthermore, regulation cannot compel private investments in unprofitable corporations.

In part, BN has been able to maintain its capital expenditure program based upon its promising future and the security provided by the assets it has purchased. For the future, we must rely to a greater extent on external sources of capital. This will require a persuasive showing that such investments will yield adequate returns. This showing can only be made through increased earnings.

As steward of the stockholders' assets and capital, I cannot in all good conscience recommend to our Board of Directors that investments be made where the revenues resulting from such investments do not cover the costs of operations, including capital costs. In the past few years, we have reinvested a substantial portion of our earnings in the railroad. In 1978, for example, our dividend payout ratio was 20 percent—which means we paid out 20 percent of our earnings in dividends and reinvested 80 percent in plant and equipmet. This is a much higher percentage of reinvestment than the typical electric utility—whose dividend payout ratio is somewhere in the range of 65 percent and whose reinvestment rate is therefore only about 35 percent. However, we cannot continue our high reinvestment rate unless we earn a fair return on the reinvested capital. I cannot recommend that equity or any other capital be invested in carrier facilities to serve coal shippers unless the rates paid for the transportation services reflect our full capital costs.

The cost of capital is as unavoidable as the cost of wages or fuel. Capital costs pay for the use of the firm's capital. If a company fails to pay labor, nobody will work for it. If a company fails to pay capital, the market will simply not provide the funds necessary for replacement, maintenance and improvements of plant and equipment. The cost of capital (including equity) is a true element of cost. Its inclusion in cost and economic analyses aids allocation of new and existing capital assets and contributes to improving our ability to provide sound transportation services.

Congress has given high priority to developing a healthy railroad industry by emphasizing the need for adequate revenue levels and thus preventing any additional calamities such as the Penn Central bankruptcy. The public interest will clearly benefit from the establishment of adequate revenue levels and the

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[4] New 49 U.S.C. § 10704(a)(2); formerly Section 15a(4) of the Interstate Commerce Act; Section 205 of the 4–R Act.

[5] *Standards and Procedures for the Establishment of Adequate Levels,* Ex Parte No. 338, decided Jan. 31, 1978, p. 7.

revitalization of the railroad industry. This is particularly true with respect to the transportation of coal.

The coal rates proposed by BN and its connecting railroads (such as Southern Pacific, Santa Fe and Chicago and North Western) are fully consistent with the national energy policy. Rates which cover costs and provide a fair return are essential if the railroads are to be revitalized—a result directly supportive of national energy policy. The Department of Energy, in the *Western Coal Rate Investigation* before the Commission (Ex Parte No. 347) and also in a number of individual rate proceedings, has expressed the concern that certain coal rates might provide an economic disincentive for utilities to burn coal and might instead encourage them to continue to burn oil or gas.

It is highly unlikely that electric utilities would have any real economic incentive to shift from coal to oil or gas. In the case of the San Antonio movement, for example, San Antonio has itself repeatedly recognized that the railroad's proposed rate of $18.23 would not cause the delivered cost of coal to exceed the delivered cost of natural gas or oil. On December 14, 1977 (two days after the railroads filed their evidence in the reopened Commission proceeding), the San Antonio Express-News published a news article based on an interview with a "CPS spokesman." ("CPS" is the City Public Service Board of San Antonio.) The article contains the following two paragraphs:

> "A CPS spokesman said the rate asked by Burlington [$18.23 per ton], if approved, would mean *'a moderate'* increase in utility bills, but *'nothing significant.'*
>
> "He said under the rate proposed by Burlington *it would still be cheaper to produce electricity with coal than with gas.*" (Italic supplied.)

Thus, San Antonio's spokesman confirmed that even with the proposed $18.23 per ton rate, coal is still cheaper than other available fuels.[6] The present rate is $18.18 per ton.

In the *Western Coal Investigation*, the railroads retained the firm of A.D. Little, Inc. to perform a study of the effects of Western coal transportation rates on interfuel competition in electricity generation. A copy of their study is in the record before the Commission in that case, and had been made available to representatives of the State of Texas, Houston Lighting and Power, the San Antonio Public Service Board and other parties. This study, which includes extensive presentation of data and analysis, looked and delivered coal costs and utilization costs for a number of key demand locations in the West. The study showed that with coal transportation rates at levels corresponding to the existing Houston tariff, Wyoming coal enjoys a substantial economic advantage over oil in Houston in 1980, and that this advantage increases over time. A. D. Little concluded that Western unit-train rates could be as much as 30 percent higher than those recently implemented and would have little or no effect on the extent to which Texas utilities or others would have any economic incentives to convert from one fuel to another. Significantly, the study also showed that competition among coals from different supply regions and via different carriers—and also Texas lignite—would exert powerful restraining influence on coal tariff increases under consideration by the railroads.[7]

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[6] Again, in its "Official Notice of Sale and Official Statement" with respect to Revenue Improvement Bonds, New Series 1978, dated Feb. 2, 1978, San Antonio advised prospective bond purchasers that if Defendant railroads' request for a rate increase to $18.23 per ton were approved, this would increase San Antonio's delivered cost of coal to "approximately $1.65 per MMBTU" (p. 55)—which is lower than what San Antonio reported to be its delivered costs of oil and gas. At page 56 of its "Official Notice," San Antonio stated that its oil cost during December 1977 were $10.18 per barrel which is equivalent to $1.67 per MMBTU as compared to a Lo-Vaca gas cost of $1.90 per MMBTU." Thus, with a railroad rate of $18.23 per ton for coal, the delivered cost of coal ($1.65 per MMBTU's) is substantially less than the cost of gas—and less than the cost of oil at the low December 1977 price. If the comparison is with oil at the average San Antonio 1977 price of $2.24 per MMBTU, or with current oil prices, coal has an even greater cost advantage over oil.

[7] The Department of Energy also submitted testimony in the *Western Coal Investigation*. This study was based, among other things, on price forecasts for crude oil. The low price forecast of DOE assumed a level world price of $15 per barrel until January 1988; and the high price forecast assumed a level world price of $15 per barrel until January 1985. (These prices were expressed in 1978 dollars.) These price paths were unrealistic at the time they were submitted in 1978, according to A.D. Little, and they appear even more unrealistic today—in light of the recent OPEC pricing actions. Although I am certainly not an expert in oil price forecasting, I know of no experts who realistically expect the world price of oil to be as low as $15 in 1988 or 1985. Yet this unrealistic assumption as to future oil prices underlies the DOE position in the coal rate investigation.

The A. D. Little study confirms our view that national energy policy will not be injured in any way by the coal rates we have sought to implement. Indeed, in our view, national energy policy supports and requires approval of the rates we have sought. Energy policy depends upon the availability of coal, which, in turn, depends upon the ability of the railroads to haul coal in increasingly large volumes. We will not be able to do this job unless we earn a fair return—one which enables us to attract capital, just as electric utilities are able to attract capital. We have established coal rates with a view to accomplishing this critically-imporant objective. If we are prevented from earning fair rates of return by unduly restrictive regulation or any other means, we will not be able to handle the large volumes of coal as efficiently as we would like—if we can handle it at all—and national energy policy will suffer. Thus, in a very direct and immediate sense, the viability of the Nation's railroad system—and in particular of BN and other Western railroads—is a key to the attainment of national energy policy objectives.

Despite the very large capital investments we have made, some utilities have objected to certain rate increases we have made and complained about our earnings on coal traffic. Exhibit 9 attached shows the rate of return on equity of 100 leading utilities. You will not that the average return on equity was 12.2 percent and ranged as high as 20.1 percent, compared with BN's return on net investment for its railroad of only 1.60 percent. In fact, Burlingotn Northern's return on equity involving all of its operations, rail and non-rail, was only 6 percent.

VI. BURLINGTON NORTHERN AND WESTERN COAL TRANSPORTATION

My testimony has described the extent to which Burlington Northern has committed itself to the movement of Western coal. We believe the Western railroads possess the ability to handle the future demand for coal. The railroads have the unique ability to serve all coal-producing regions and transport the growing coal production to the widest possible range of consuming points. It is noteworthy that railroads are able to haul Wyoming coal some 1,600 miles to Texas destinations—one of the longest all-rail coal routes in the world.

In addition to serving the widest possible areas of consumption through the established rail network, the movement of coal is and will be efficiently and economically handled in volume through the unit train concept. Using this approach, cost savings are achieved which are shared with our shippers in the form of lower rates. For example, BN's average revenue per ton-mile is 2 cents; rates just recently approved by the Commission for San Antonio are only slightly more than a penny a ton-mile, about half the average of all of BN' traffic. This concept requires continuous cycling of unit trains with attendant dedication of motive power in order to achieve consistent and reliable service for the needs of volume consumers, particularly the electric utilities.

BN is virtually constructing a new, more efficient and productive railroad geared to the demands of Western coal, as well as other traffic. While our existing facilities at the time of merger in 1970 were fully capable of handling the existing and projected general freight traffic, the unit train concept and the need for efficient cycling of the movements of such trains require heavier rail, specialized power units, additional sidings and other improvements in order to accommodate a heavy volume of coal traffic. Of necessity, improvements to our existing plant have, of course, impeded somewhat the flow of coal. However, we view this impediment as a short-term situation which will be rectified upon completion of our coal-related improvement projects. I am confident that BN will be able to handle both economically and efficiently the projected future volumes of coal traffic.

As previously indicated, BN is engaged in a program of raising coal rates negotiated in the early 1970's to levels dictated by current economics. I anticipate that the rate increases sought by Burlington Northern will provide adequate revenues to cover the cost of transportation of coal, including the related incremental investments, and provide a reasonable return, thus enabling us to secure the necessary external financing for the completion of the balance of our coal projects. Any decrease in projected coal demand, of course, will have an adverse effect. Similarly, environmental restrictions on coal which may be imposed could also mitigate against its use and adversely affect the railroads. Development and opening of other coal sources in the West could impact upon production

and movements from the Powder River Basin area served by Burlington Northern. Of particular concern, of course, is the possibility of construction of coal slurry pipelines, which could adversely affect our future financing ability and result in some restriction of our projects to improve our plant for the movement of coal. All these factors could affect our ability to secure outside financing, which is essential for the handling of projected coal tonnages.

It should also be pointed out that a coal slurry pipeline, contrary to popular belief, would not be a competitive force but would actually be an anti-competitive force. The historic pattern of pipelines and the thrust of the coal slurry pipelines is to "lock in" and monopolize through long-term "take or pay" contracts, thus foreclosing competition. Moreover, coal slurry lines are less energy efficient than railroads—an important consideration in this energy conscious era.[8] They would also consume enormous amounts of the arid West's scarce water resources.

In the event any of the factors which I have mentioned restrict or inhibit production or the rail transportation of coal from BN origins, some reduction of proposed plant expansion would undoubtedly occur. This, in turn, could impact upon our remaining coal customers and their rates. Any reduction in projected coal tonnages could inevitably result in higher unit costs per ton for our remaining coal shippers.

VII. BENEFICIAL LEGISLATIVE CHANGES

We understand this Committee is also interested in securing the Company's views on legislative changes which would be beneficial to the railroad industry. Accordingly, I submit the following recommendations:

1. It is apparent that Burlington Northern needs to obtain private capital in order to maintain, expand and improve its plant and equipment. Burlington Northern strongly supports recent proposals to permit businesses to obtain faster writeoffs or depreciation of new investments in buildings and equipment over 3 to 10 years while retaining full investment tax credit.

2. For years, Burlington Northern, along with the rest of the railroad industry, has supported the imposition of adequate user charges on barges and motor carriers to compensate the public for the facilities utilized by barges and trucks. There is no reason why the general taxpayer should have to subsidize our competitors to the detriment of both the taxpayer and the railroad industry.

3. Burlington Northern supports the concept of a refundable investment tax credit to assist capital intensive utilities and industries to fully utilize the benefits of investment tax credit. Alternatively, unused investment tax credit could be applied to satisfy other Federal taxes.

4. Burlington Northern supports the concept and application of workmen's compensation principles, rather than the Federal Employers' Liability Act which is based upon negligence, to the railroad industry. Application of such a law to the railroad industry would insure the right of injured employees to fully recover for injuries incurred, with a minimum of administrative costs and attorneys' fees.

5. Congress will be asked to consider changes in the Social Security System to insure its integrity. In this regard, we would encourage legislation which would assist the railroad industry to meet the deficit in the Railroad Retirement fund. We have taken steps to expand piggyback and other intermodal transportation of freight. To encourage these efficiencies, we need legislation which would insure that nonrailroad employees engaged in intermodal transportation would remain subject to Social Security rather than Railroad Retirement.

CONCLUSION

BN's desire to provide good service for all coal shippers has prompted us to carefully project and plan for the requisite capital expenditures. Our ability to make these expenditures depends upon our earnings performance. Absent adequate earnings, we simply will not be able to make the capital expenditures required to provide adequate service. Any inability to fund needed capital expendi-

[8] Mr. Louis W. Menk, Chairman of Burlington Northern Inc., provided a full statement of the problems inherent in coal slurry pipelines in his testimony before the Subcommittee on Mines and Mining and the Subcommittee on Indian Affairs and Public Lands of the House Committee on Interior and Insular Affairs (H.R. 1609) in April 1977.

tures will result in increased maintenance costs, inferior service and increased transit times. The standard of living and the economic strength of this Nation have resulted from the employment of capital in efficiency-increasing and cost-reducing capital expenditures.

Congress' mandate, as contained in the 4–R Act, permits this company to take the necessary economic steps to improve its earnings and to meet the goals established by such legislation. Despite an inadequate rate of return, Burlington Northern has had the confidence and the courage to expend in excess of $665,000,000 through 1978 and plans to spend an additional $1,500,000,000 through 1983 to handle Western coal. It is essential that the Company be permitted to obtain an adequate rate of return to support such an investment and to insure the future funding of these planned expenditures. I submit that the Company's objective of seeking a reasonable rate of return in order to improve its overall efficiency and contribute to solving the energy crisis is clearly in the national interest and of benefit to every American.

[EXHIBIT 1 MAY BE FOUND IN THE COMMITTEE'S FILES]

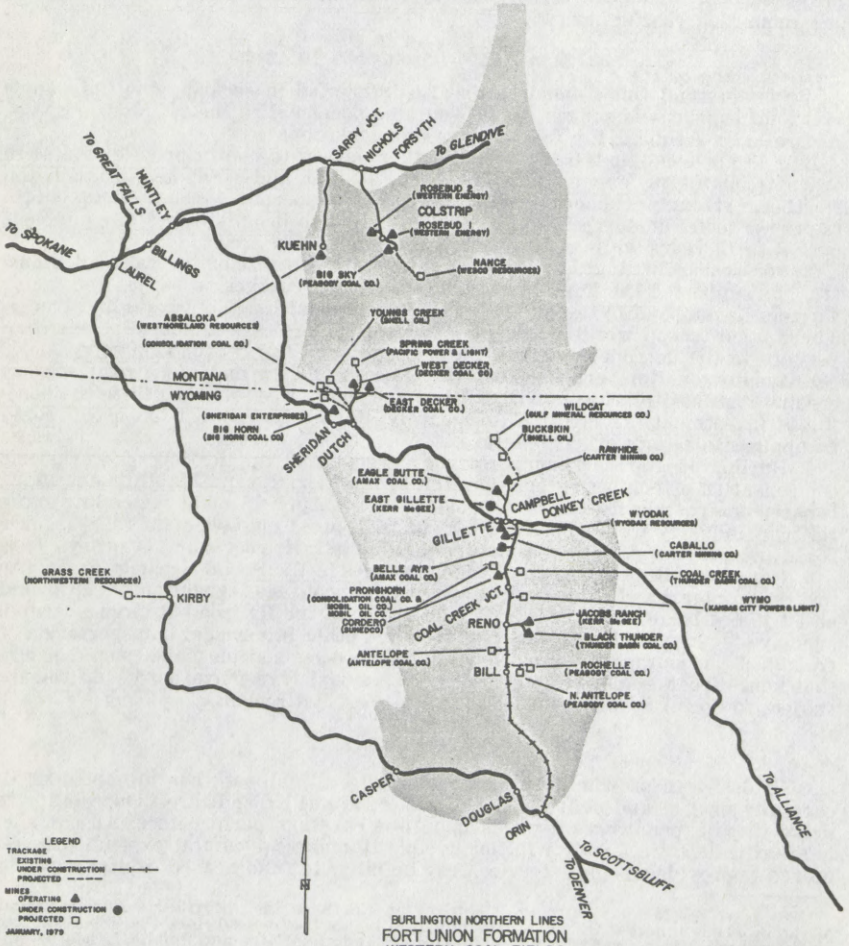


EXHIBIT 2

EXHIBIT 3

BURLINGTON NORTHERN, INC. AND SUBSIDIARY COMPANIES—STATEMENT OF CONSOLIDATED INCOME

[In thousands of dollars]

	Year ended Dec. 31—				
	1974 (a)	1975 (b)	1976 (c)	1977 (d)	1978 (e)
Operating revenues and sales:					
Railroad	$1,375,392	$1,408,234	$1,642,207	$1,801,702	$2,110,293
Trucking	26,317	20,872	24,668	30,524	46,809
Air freight forwarder	30,206	45,219	72,214	103,410	154,745
Forest products	68,267	61,240	85,471	103,814	135,851
Oil and gas	18,981	20,839	30,445	26,925	35,488
Coal and minerals	4,275	8,112	7,358	7,148	6,287
Land and real estate	19,072	20,859	24,992	30,978	34,845
Other operations	9,005	9,843	8,777	4,932	8,541
Total	1,551,515	1,595,218	1,896,132	2,109,442	2,532,139
Operating expenses and cost of sales:					
Railroad	1,280,155	1,334,238	1,565,759	1,741,471	2,026,818
Trucking	27,383	20,691	23,384	28,298	43,656
Air freight forwarder	29,336	43,748	68,779	98,860	146,079
Forest products	44,643	47,428	57,824	69,937	88,513
Oil and gas	4,947	9,365	16,215	15,038	18,454
Coal and minerals	883	1,106	1,568	1,367	1,352
Land and real estate	3,953	4,965	4,826	5,402	7,434
Other operations	8,344	9,295	8,226	4,276	7,892
Total	1,399,626	1,470,836	1,746,581	1,964,649	2,340,198
Net operating income	151,889	124,382	149,551*	144,793	191,941
Other income (net):					
Interest and dividends	12,257	6,115	4,483	5,864	11,403
Minority interest in net income of subsidiaries	(93)	(224)	(187)	(311)	(154)
Other income (charges)—Net	(137)	1,280	(1,008)	(1,322)	(6,161)
Net other income	12,027	71,71	3,288	4,231	5,088
Income available for fixed charges	163,916	131,553	152,839	149,024	197,029
Interest and other fixed charges	58,314	64,387	65,267	68,103	73,577
Income before income taxes	105,602	67,166	87,572	80,921	123,452
Provision for income taxes	21,316	14,223	14,543	4,068	8,956
Net income	84,286	52,943	73,029	76,853	114,496
Earnings per common share and common share equivalent (dollars)	6.65	4.12	5.69	5.74	8.52
Earnings per common share assuming dilution (dollars)	6.25	3.95	5.35	5.31	7.39

Source: Burlington Northern 1978 Annual Report.

EXHIBIT 4

BURLINGTON NORTHERN, INC. AND SUBSIDIARY COMPANIES—LINE OF BUSINESS, DOLLAR CONTRIBUTION ANALYSIS

[In thousands of dollars]

	Year ended Dec. 31—				
	1974	1975	1976	1977	1978
	(a)	(b)	(c)	(d)	(e)
Operating revenues and sales:					
Railroad	$1,375,392	$1,408,234	$1,642,207	$1,801,702	$2,110,293
Trucking	26,317	20,872	24,668	23,524	46,089
Air freight forwarder	30,206	45,219	72,214	103,410	154,745
Forest products	68,267	61,240	85,471	103,814	135,851
Oil and gas	18,981	20,839	30,445	26,925	35,488
Coal and minerals	4,275	8,112	7,358	7,148	6,287
Land and real estate	19,072	20,859	24,992	30,987	34,845
Other operations	9,005	9,843	8,777	4,932	8,541
Total	1,551,515	1,595,218	1,896,132	2,109,442	2,532,139
Net operating income:					
Railroad	95,237	73,996	76,448	60,231	83,475
Trucking	(1,066)	181	1,284	2,226	2,433
Air freight forwarder	870	1,471	3,435	4,550	8,666
Forest products	23,624	13,812	27,647	33,877	47,338
Oil and gas	14,034	11,474	14,230	11,887	17,034
Coal and minerals	3,392	7,006	5,790	5,781	4,935
Land and real estate	15,137	15,894	20,166	25,585	27,411
Other operations	661	548	551	656	649
Total	151,889	124,382	149,551	144,793	191,941
Income before income taxes:					
Railroad	36,867	7,934	11,940	(10,745)	9,131
Trucking	(590)	70	1,237	2,610	1,792
Air freight forwarder	891	1,499	3,545	4,626	8,813
Forest products	24,303	13,907	27,703	33,885	47,804
Oil and gas	14,619	11,835	14,637	12,680	18,366
Coal and minerals	3,393	7,035	5,838	5,727	4,879
Land and real estate	15,057	18,845	20,262	26,013	27,501
Other operations	467	379	341	496	424
Corporate, primarily unallocated interest and dividends	10,595	5,662	2,069	5,629	4,742
Total	105,602	67,166	87,572	80,921	123,452

Source: Burlington Northern 1978 Annual Report.

EXHIBIT 5

BURLINGTON NORTHERN, INC. AND SUBSIDIARY COMPANIES—INCOME ANALYSIS

[In percent]

	Year ended Dec. 31—				
	1974	1975	1976	1977	1978
Percentage contribution to operating revenues and sales:					
Railroad	88.65	88.28	86.61	85.41	83.34
Trucking	1.69	1.31	1.30	1.45	1.82
Air freight forwarder	1.95	2.83	3.81	4.90	6.11
Forest products	4.40	3.84	4.51	4.92	5.36
Oil and gas	1.22	1.30	1.60	1.28	1.40
Coal and minerals	.28	.51	.39	.34	.24
Land and real estate	1.23	1.31	1.32	1.47	1.38
Other operations	.58	.62	.46	.23	.34
Total	100.00	100.00	100.00	100.00	100.00
Percentage contribution to net operating income:					
Railroad	61.00	57.81	49.51	41.60	43.49
Trucking	.74	1.50	2.00	1.54	1.27
Air freight forwarder	.83	1.51	2.76	3.14	4.52
Forest products	15.55	11.10	18.49	23.40	24.66
Oil and gas	9.24	9.23	9.52	8.21	8.87
Coal and minerals	2.23	5.63	3.87	3.99	2.57
Land and real estate	9.97	12.78	13.48	17.67	14.28
Other operations	.44	.44	.37	.45	.34
Total	100.00	100.00	100.00	100.00	100.00
Percentage contribution to income before income taxes:					
Railroad	34.91	11.81	13.64	(13.28)	7.40
Trucking	(.56)	.10	1.41	3.22	1.45
Air freight forwarder	.84	2.23	4.05	5.72	7.14
Forest products	23.02	20.71	31.63	41.87	38.72
Oil and gas	13.84	17.62	16.71	15.67	14.88
Coal and minerals	3.21	10.48	6.67	7.08	3.95
Land and real estate	14.26	28.06	23.14	32.15	22.28
Other operations	.44	.56	.39	.61	.34
Corporate, primarily unallocated interest income and dividends	10.04	8.43	2.36	6.96	3.84
Total	100.00	100.00	100.00	100.00	100.00
Return on average stockholders' equity	5.2	3.2	4.3	4.2	6.0
Ratio of earnings to fixed charges and preferred dividend requirements [1]	2.41	1.82	2.04	1.84	2.04

[1] Ratio for the year 1978 is estimated.

Source: Burlington Northern 1978 Annual Report.

EXHIBIT 6

RATE OF RETURN ANALYSIS

[In percent]

	1975 (a)	1976 (b)	1977 (c)	1978 (d)
Return on railway investment—BNI (ICC basis—Adjusted for tax treatment [1])	1.96	2.28	1.68	1.60
Return on equity—Consolidated	3.2	4.3	4.2	6.0
Citibank [2]—Returns on net worth:				
Railroads	.8	1.9	2.4	1.3
Total manufacturing	12.3	15.0	14.9	15.9
Grand total (all industries)	11.1	13.4	14.1	14.9

[1] In computing this ratio net railway operating income is reduced by the tax benefit attributable to investment tax credit. Also, the net investment in railroad property is reduced by the accumulated deferred taxes. Data for 1975 from ex parte 353. Data for 1976 and 1977 from ex parte 357. Beginning with 1978, 3 small railroads—the Oregon Electric Ry. Co., the Oregon Trunk Ry., and the Walla Walla Valley Ry. Co.—were included in BNI reports. Their inclusion did not significantly impact this calculation.

[2] Monthly Economic Letter, April issue each year, Citibank, New York.

EXHIBIT 7

Average price of newly issued railroad bonds

Year:	*Average price—percent*
(a)	(b)
1957	5.01
1958	4.56
1959	(1)
1960	(1)
1961	4.88
1962	4.88
1963	4.66
1964	(1)
1965	(1)
1966	(1)
1967	(1)
1968	7.40
1969	(1)
1970	8.75
1971	8.43
1972	(1)
1973	7.78
1974	9.45
1975	(1)
1976	8.37
1977	9.18

[1] No new issues.

Source: Moody's Transportation Manual.

EXHIBIT 8

TOTAL[1] AMOUNT OF BONDS ISSUED IN UNITED STATES BY BOND RATING

[In millions of dollars]

Year	Bond ratings—Moody's				
	Aaa	Aa	A	Baa	Total, all ratings
(a)	(b)	(c)	(d)	(e)	(f)
1970	4,245	4,077	6,458	975	15,756
1971	4,795	4,314	4,686	1,448	15,242
1972	2,619	2,952	3,050	796	9,416
1973	3,280	2,384	2,764	351	9,144
1974[2]	4,930	3,905	3,911	525	13,271
1975[2]	4,515	3,960	5,930	560	14,965
1976[2]	3,350	4,035	4,092	1,910	13,387
1977[2]	3,840	3,147	3,042	1,433	11,462
Total	31,574	28,774	33,933	7,998	102,643
Average per year	3,947	3,597	4,242	1,000	12,830

[1] Does not include convertibles, bonds with warrants, serial issues, or bonds with maturities of 10 yr or less.
[2] Railroad issues were eliminated from this tabulation in 1974 through 1977 because of their relative insignificance.

Source: Moody's Investors Service, Inc., Mr. Earl Stevens, head of statistics division, New York, N.Y.

Exhibit 9

ELECTRIC UTILITY COMMON STOCK MARKET DATA

[Ranking by return per average equity]

	May 19, 1979 price	1979 year-to-date High–Low	Monthly volume (000)	Shares O/S (millions)	1978 EPS	Current EPS (month)	P/E	Dividend rate	Yield (percent)	Pay out (percent)	Dec. 31, 1978 book value per share	Market per book (percent)	Return per average equity (percent)
1. Central La Energy	30 1/8	31 3/4–19 7/8	527	9.6	$3.06	$3.92(4)	7.7	$1.68	5.58	43	20.33	148	20.1
2. Minnesota Pr & Lt [1]	19 7/8	21 1/4–18 7/8	86	10.2	3.19	3.93(3)	5.1	1.94	9.76	49	22.27	89	18.1
3. Southwestern P S	13 1/4	14 5/8–13 1/8	449	25.9	1.64	1.60(4)	8.3	1.28	9.66	80	9.29	143	16.7
4. Southern Ind G & E	17 7/8	18 3/4–17 1/8	75	5.3	3.04	3.25(4)	5.5	1.52	8.50	47	20.88	86	16.2
5. Savannah Elec & Pr	10 3/8	11 1/2–10	33	3.4	2.75	2.69(3)	3.9	1.00	9.64	37	17.60	59	16.1
6. Tucson Elec Pwr	16 1/2	16 7/8–15 3/4	483	21.3	1.95	2.15(3)	7.5	1.42	8.81	66	14.54	111	15.3
7. Cen Ill Pub Svc [1]	13 1/2	13 3/4–12 1/2	279	23.3	1.63	2.08(4)	6.5	1.36	10.07	65	13.86	97	15.1
8. Central Southwest	15 3/8	16 1/4–14 5/8	708	65.5	2.25	2.32(3)	6.6	1.42	9.24	61	15.83	97	15.1
9. Central Vt Pub Svc	14 3/4	16 5/8–14 5/8	43	2.9	2.92	3.01(3)	4.9	1.64	11.12	54	20.84	71	15.0
10. Pub Svc Indiana [1]	26	26 5/8–24 1/8	474	27.1	2.92	3.29(4)	7.9	2.32	8.92	71	23.17	112	14.5
11. Iowa Public Svc	20 3/4	23 3/8–19 7/8	109	8.9	3.05	3.12(3)	6.7	2.04	9.83	65	22.33	93	14.3
12. New England Elec [1]	22 3/8	23 3/8–20 1/8	226	21.1	3.21	3.48(3)	6.4	2.24	10.01	64	24.97	90	14.3
13. Tampa Electric	17 3/4	18 1/8–17 1/8	353	15.3	2.53	2.39(3)	7.4	1.44	8.11	60	17.36	102	14.3
14. New Eng G & E Asso	15 1/2	16 1/8–14 1/8	49	7.4	2.40	2.59(3)	5.8	1.60	10.58	62	18.63	81	14.2
15. Northwestern P S	16 5/8	17 3/4–16 3/8	39	2.4	2.65	2.64(3)	6.3	1.80	10.83	68	18.72	89	14.2
16. Otter Tail Power	20 7/8	23 –19 1/4	118	3.8	3.31	3.27(3)	6.4	2.00	9.58	61	23.61	88	14.2
17. Wisconsin Pub Svc	17 3/8	19 7/8–16 1/4	95	10.8	2.53	2.65(3)	6.6	1.62	9.32	61	18.24	95	14.2
18. Houston Industries	28 3/4	31 1/8–27 1/8	501	33.1	4.21	4.51(4)	6.4	2.36	8.21	52	33.04	87	14.1
19. Iowa–Ill Gas & El [1]	18 1/4	21 3/8–18 1/2	75	9.1	2.74	2.85(3)	6.4	2.00	10.96	70	20.96	87	13.9
20. Northern States [1]	23 1/2	25 7/8–21 3/8	1,124	30.0	3.29	3.51(3)	6.6	2.16	9.34	62	25.99	89	13.8
21. Pub Svc New Hamp	17 7/8	21 1/8–17 1/8	264	11.8	3.25	3.13(3)	5.7	2.12	11.86	68	22.89	78	13.8
22. Iowa Southern Ut [1]	23 3/4	25 7/8–23 1/4	31	2.5	3.47	3.76(4)	6.3	2.28	9.60	61	27.98	85	13.8
23. Middle South Utils	15 5/8	16 1/4–13 5/8	1,285	84.8	2.46	2.50(4)	6.1	1.52	9.89	61	18.60	83	13.7
24. Community Pub Svc	20 3/8	21 –18 3/4	15	1.9	3.11	3.18(3)	6.4	1.88	9.23	59	23.63	86	13.7
25. Florida Pwr & Lt	26 1/2	28 7/8–26	1,001	40.2	4.54	4.27(3)	6.2	2.40	9.06	56	32.49	82	13.7
26. Iowa Power & Lt [1]	23 3/4	26 –22 3/4	73	7.3	3.62	3.46(3)	6.9	2.52	10.61	73	25.98	91	13.6
27. Cincinnati G & E	19 1/4	21 1/8–18	473	26.8	2.54	2.66(4)	7.2	1.96	10.18	74	19.84	97	13.6
28. El Paso Electric	9 7/8	11 1/4– 9 7/8	285	12.7	1.30	1.30(3)	7.6	1.04	10.53	80	10.01	99	13.4
29. Union Electric	14	14 3/4–13 1/8	322	52.1	2.01	2.11(3)	6.6	1.44	10.29	68	16.11	87	13.3
30. Empire Dist Elec [1]	13 3/4	14 1/2–13 1/4	22	4.0	1.70	1.94(3)	7.1	1.40	10.18	72	14.75	93	13.3
31. Sierra Pac Pwr Co	13	14 –12 3/4	90	9.3	1.83	1.98(4)	6.6	1.22	9.38	62	15.16	86	13.2
32. Washington Wtr Pwr	22 3/8	23 5/8–21 3/8	47	9.0	3.19	3.08(4)	7.3	2.08	9.30	68	23.88	94	13.2
33. Texas Utilities [1]	19 1/4	20 1/8–18	1,522	86.0	2.54	2.58(4)	7.5	1.64	8.52	64	20.14	96	13.1
34. Arizona Public Svc	18 7/8	21 3/8–18 1/4	601	32.8	3.15	2.90(3)	6.5	1.88	9.96	65	22.56	84	13.1
35. Illinois Power [1]	21 1/4	23 3/4–20	826	28.5	2.74	2.80(3)	7.6	2.28	10.73	81	21.95	97	12.9
36. Carolina Pwr & Lt	20 1/8	22 1/4–18 1/4	669	40.6	3.10	3.08(4)	6.5	1.96	9.74	64	24.30	83	12.9
37. Duke Power	18	20 3/4–16 1/2	1,446	78.0	2.61	2.70(3)	6.7	1.80	10.00	67	21.31	84	12.9

Exhibit 9—Continued

ELECTRIC UTILITY COMMON STOCK MARKET DATA—Continued

[Ranking by return per average equity]

	May 19, 1979 price	1979 year-to-date High–Low	Monthly volume (000)	Shares O/S (millions)	1978 EPS	Current EPS (month)	P/E	Dividend rate	Yield (percent)	Pay out (percent)	Dec. 31, 1978 book value per share	Market per book (percent)	Return per average equity (percent)
38. Indianapolis P & L	23⅛	23⅜–21½	157	13.1	2.30	2.84(4)	8.1	2.12	9.17	75	22.25	104	12.9
39. Central Maine Pwr	13¾	16 –13¼	104	11.8	2.19	2.17(3)	6.3	1.52	11.05	70	17.25	80	12.8
40. Consumers Power	21⅛	23⅝–19	802	47.4	3.21	3.53(3)	6.0	2.24	10.60	63	27.86	76	12.8
41. Wisconsin Pwr & Lt	18⅝	19¾–17¾	68	11.0	2.15	2.41(3)	7.7	1.76	9.45	73	19.22	97	12.7
42. Pub Svc New Mexico	19½	20⅝–18⅞	433	15.2	2.83	2.78(3)	7.0	1.92	9.85	69	22.03	89	12.7
43. Pennsylvania P & L[1]	20¾	21⅛–18¾	402	39.1	2.86	3.13(3)	6.6	2.04	9.83	65	25.12	83	12.6
44. Hawaiian Electric	24⅜	27½–23¾	77	5.9	3.38	3.46(3)	7.0	2.24	9.19	65	28.21	86	12.5
45. Long Island Ltng	16¼	18¼–15⅛	668	51.4	2.44	2.37(3)	6.9	1.70	10.46	72	19.12	85	12.5
46. Southern Calif Ed[1]	26	27⅜–24¼	933	62.9	3.52	4.04(3)	6.4	2.48	9.54	61	32.57	80	12.5
47. Orange & Rock Ut[1]	13⅞	15¾–13⅝	67	10.1	2.10	2.06(3)	6.7	1.52	10.95	74	16.92	82	12.4
48. Florida Power Corp	29⅝	32⅞–27¼	277	14.4	4.74	4.28(4)	6.9	2.76	9.32	64	35.71	83	12.4
49. United Illuminating	23⅞	24⅞–21⅞	61	6.1	3.06	3.64(4)	6.4	2.56	11.07	70	29.36	79	12.3
50. Nevada Power	20½	22¾–20	669	64.5	2.95	3.14(4)	6.5	2.20	10.73	70	26.13	78	12.1
51. Pub Svc El & Gas[1]	12⅞	14⅛–12⅛	458	23.8	1.85	1.88(3)	6.8	1.38	10.72	73	15.77	82	12.1
52. Delmarva Pwr & Lt	25⅛	27 –23⅜	449	18.5	3.50	3.49(4)	7.2	2.38	9.47	68	29.50	85	12.1
53. Wisconsin Elec Pr[1]	23⅛	25⅛–21⅝	1,481	100.9	3.20	3.52(3)	6.7	2.32	9.87	66	29.76	79	12.0
54. Pacific Gas & Elec	19⅜	20¾–19	156	10.8	2.74	2.75(3)	7.2	1.96	9.92	71	23.12	85	12.0
55. Kansas Power & Lt[1]	16⅜	17½–15½	69	10.4	1.91	2.25(4)	7.3	1.70	10.38	76	19.05	86	11.9
56. Central Ill Light[1]	18⅝	20¾–18	44	5.4	3.04	3.08(3)	6.0	1.96	10.52	64	26.29	71	11.8
57. Central Hudson G & E	17	18½–16	47	5.5	2.45	2.34(3)	7.3	1.50	8.82	64	20.05	85	11.8
58. Montana Dakota Ut	20⅜	21¼–19½	319	37.4	2.51	2.42(3)	8.4	1.92	9.42	79	20.80	98	11.8
59. Pacific Power & Lt	13¼	15⅜–13	793	61.8	1.89	2.00(3)	6.6	1.44	10.87	72	17.14	77	11.7
60. Niagara Mohawk Pwr	20¼	23⅜–19	150	15.7	2.78	2.83(3)	7.2	2.20	10.86	78	24.29	83	11.7
61. Toledo Edison	20⅛	20¾–18	126	9.7	1.88	2.92(4)	6.9	2.04	10.14	70	24.92	81	11.7
62. Kentucky Utilities	24¼	26 –21½	596	31.0	3.38	3.34(4)	7.3	2.44	10.06	73	29.20	83	11.7
63. Baltimore Gas & E[1]	8⅞	10 – 8⅝	738	65.2	1.29	1.53(4)	5.8	1.02	11.45	66	13.27	67	11.6
64. Northeast Utils	14¾	16⅞–14¼	70	5.5	1.96	1.97(3)	7.5	1.48	10.03	75	17.54	84	11.4
65. Madison Gas & El[1]	17¼	17⅞–15⅜	833	34.7	1.90	2.33(3)	7.4	1.72	9.97	74	20.59	84	11.4
66. Allegheny Power	16⅜	18⅛–15⅞	220	25.7	2.46	2.34(3)	7.0	1.68	10.26	72	20.78	79	11.3
67. New York St E & G[1]	13⅞	15⅞–13¾	57	7.3	2.04	2.02(3)	6.9	1.50	10.81	74	18.12	77	11.3
68. Iowa Elec Lt & Pr[1]	18¾	19⅞–17½	120	12.0	2.21	2.37(3)	7.9	1.74	9.28	73	21.27	88	11.3
69. Atlantic City Elec	15⅝	17½–15⅜	224	18.8	2.17	2.07(3)	7.5	1.56	9.98	75	18.63	84	11.2
70. Puget Sound P & L[1]	12½	13½–11¾	509	38.3	1.73	1.69(3)	7.4	1.36	10.88	80	15.50	81	11.1
71. Gulf States Utils	18	19¼–16⅜	777	35.8	2.20	2.16(3)	8.3	1.92	10.67	89	19.69	91	11.0
72. Cleveland El Illu	21½	24¾–20⅝	158	11.5	2.96	3.36(3)	6.4	2.44	11.35	73	31.00	69	10.9
73. Boston Edison													

74. Detroit Edison [1]	15 1/4	15 5/8–13 1/2	861	66.4	1.76	2.04(4)	7.4	1.60	10.58	78	18.81	80	10.8
75. Interstate Power	14 1/8	15 5/8–13 3/4	64	7.6	1.60	1.70(3)	8.3	1.50	10.62	88	15.81	89	10.8
76. Rochester Gas & El	16	18 –15 5/8	134	15.2	2.46	2.34(3)	6.8	1.44	9.00	62	22.01	73	10.8
77. So Carolina E & G [1]	16 5/8	18 –15	384	23.6	2.26	1.95(4)	8.5	1.68	10.11	86	18.44	90	10.7
78. Oklahoma Gas & El [1]	16	17 7/8–15 1/2	795	26.7	1.97	1.78(3)	9.0	1.60	10.00	90	16.85	95	10.7
79. American Elec Pwr [1]	20 3/8	23 1/2–19 7/8	1,444	110.7	2.26	2.27(3)	9.0	2.18	10.70	96	21.47	95	10.6
80. San Diego Gas & El	15	15 7/8–14	409	27.6	2.02	1.82(3)	8.2	1.44	9.60	79	17.41	86	10.5
81. Commonwealth Ed [1]	24 1/4	27 3/4–22 3/8	1,805	85.6	3.30	2.97(4)	8.2	2.60	10.72	88	29.30	83	10.3
82. Montana Power [1]	21 5/8	22 7/8–20 1/2	275	10.2	2.71	2.61(3)	8.3	2.04	9.43	78	25.98	83	10.2
83. General Pub Utils	8 3/4	18 7/8– 8 1/4	5,476	60.5	2.30	2.25(4)	3.9	1.00	11.43	44	22.41	39	10.1
84. Utah Power & Light	18 1/2	19 3/4–17 3/4	486	32.8	1.93	1.79(4)	10.3	1.76	9.51	98	18.16	102	9.9
85. Potomac Elec Pwr [1]	12 7/8	14 5/8–12 3/8	632	40.7	1.70	1.59(4)	8.1	1.34	10.41	84	16.17	80	9.9
86. Dayton Power & Lt	15 5/8	16 7/8–14 3/4	233	23.4	1.73	1.83(3)	8.4	1.74	11.32	95	18.39	84	9.9
87. Northern Ind P S [1]	15	16 3/4–14 7/8	265	30.7	1.61	1.85(4)	8.1	1.50	10.00	81	18.71	80	9.9
88. Consolidated Ed	22 3/4	25 –21	976	62.2	4.29	4.00(3)	5.7	2.44	10.73	61	41.89	54	9.8
89. Philadelphia Elec	15 3/8	17 5/8–15 1/8	893	80.5	1.87	1.87(3)	8.2	1.80	11.71	96	19.28	80	9.7
90. Pub Svc Colorado	15 5/8	17 3/8–15 1/4	601	31.8	1.66	1.70(3)	9.2	1.60	10.24	94	17.63	89	9.6
91. Virginia Elec & Pr	12 5/8	14 3/4–12	2,249	85.2	1.88	1.77(3)	7.1	1.40	11.09	79	19.09	66	9.3
92. Idaho Power	25 1/4	26 1/8–24	101	10.5	2.96	2.58(3)	9.8	2.28	9.03	88	28.89	87	9.0
93. Kansas City P & L [1]	24 7/8	27 1/8–24 1/8	291	11.6	3.55	2.93(4)	8.5	2.66	10.69	91	32.99	75	8.9
94. Kansas Gas & Elec [1]	18 3/8	19 3/4–17 1/4	115	11.1	2.28	1.93(4)	9.5	1.90	10.34	98	21.95	84	8.7
95. Louisville G & E	20 1/2	21 7/8–19 1/2	157	10.2	2.06	2.05(4)	10.0	2.00	9.76	98	24.35	84	8.4
96. Southern Co. [1]	12 1/2	14 7/8–12	2,413	143.4	1.45	1.41(4)	8.9	1.54	12.32	109	17.05	73	8.2
97. Col & So Ohio Elec	22 1/2	24 5/8–20 7/8	173	16.2	1.73	2.13(4)	10.6	2.32	10.31	109	25.69	88	8.2
98. Portland Gen Elec	17 1/8	18 3/8–16 1/8	327	31.0	1.40	1.41(3)	12.1	1.70	9.93	121	18.42	93	7.6
99. Duquesne Light	14 3/8	16 7/8–14 1/4	358	31.8	1.49	1.39(3)	10.3	1.72	11.97	124	18.20	79	7.6
100. Ohio Edison [1]	14 3/4	17 1/2–14 5/8	1,640	58.1	1.19	1.21(4)	12.2	1.76	11.93	145	16.33	90	7.3
[1] Dividend reinvestment at 5-percent discount:													
High							12.2		12.32	145		148	20.1
Low							3.9		5.58	37		39	7.3
Average							7.3		10.07	74		86	12.2
Median							7.1		10.02	71		85	12.1

Senator BENTSEN. Mr. Miller.

STATEMENT OF RICHARD E. MILLER, EXECUTIVE VICE PRESIDENT, AMAX COAL CO., INDIANAPOLIS, IND.

Mr. MILLER. Mr. Chairman, my name is Richard E. Miller. I am executive vice president of AMAX Coal Co., a division of AMAX, Inc. AMAX is the third largest producer of coal in the United States. We operate coal mines in the Illinois Basin and in the Powder River Basin of Wyoming.

I am here today to present coal industry comments and views on coal production, transportation, and utilization. In my oral statement I will summarize the prepared statement and center on key aspects of our Nation's coal distribution system.

First I will discuss the Nation's historical trends during the past 10 years and examine related projections on coal production and transportation. Second, I would like to address some basic issues faced in seeking greater use of coal, focusing on the critical areas for attention to ameliorate problems encountered in coal production, transportation and utilization with a view toward increasing the level of coal usage in the United States.

Selected data on coal production, transportation, and utilization, which support several references that I will make to statistical information in my testimony, are presented in a series of tables and figures at the end of my prepared statement.

I would request that that be entered into the record.

Senator BENTSEN. Very well. That will be done at the end of your oral statement.

Mr. MILLER. Thank you.

During the period 1969 to 1977, annual coal production in the United States has grown from 561 to 691 million tons, an average annual increase of just over 2.6 percent. During the first 4 years, 1969–73, the rate of increase in production was much less, 1.4 percent, than in the 1973–77 time frame when production increased at an average 4 percent per annum.

The increase in production at the national scale has not been distributed evenly across the eastern, central and western coal producing regions. In the 1969–77 period, Eastern coal production remained relatively stagnant—in the 390–400-million-ton range. Production dropped to a low of 375, 376, and 379 million in 1971, 1973, and 1974, respectively, due to labor problems; 1971 and 1974, due to labor problems and market conditions. A high of 420 million was produced in 1970, a year of unusually high demand for metallurgical coal for use domestically and for export overseas.

The Central States coal production has stayed in the 130–140-million-ton range since 1969, dropping below that only during periods of extended strikes.

But western coal production accounts for substantially all of the growth in coal production in the United States during the last decade increasing from 31 million tons in 1969 to 163 million in 1977 and 182 million in 1978.

The growth in western coal production has created significant new transportation demands for rail carrier services within the west-

ern coal marketing regions. For instance, in 1978, over 54 percent of all coal mined in the West went by rail from origin to destination. Another 6.7 percent moved by rail from the mine to a river or to the Great Lakes for transshipment to its ultimate destination.

In terms of tonnage, the Nations' rail carriers transported over 248 million tons of coal to electric utilities in 1977, a high volume of freight tonnage moving over greater distances in recent years due to the emergence of western coal in the marketplace.

Western low-sulfur coal has grown rapidly in importance due to an increase in the number of coal-fired utilities in the West and Southwest providing a ready, although distant, market for this surface-mined coal.

The percentage of coal mined by surface methods has increased with the rapid increase in western production. In 1969, 38 percent of total U.S. production was from surface mines. In 1977, 62 percent was surface production. In the West, more than 90 percent of production comes from surface mines.

It is readily apparent that western coal will continue to grow as a major source of future energy supply for the generation of electric power. This growth will be dependent on improved surface transport systems.

Electric utilities are the major customer for coal produced in the United States as evidenced by the fact that nearly 78 percent of the coal consumed during 1978 was used for producing electricity. It is clear, therefore, that the transportation system required for moving coal in the United States must focus particularly on electric utility consumer destinations.

The Department of Energy has forecast that coal consumption by electric utilities will increase from 480 million tons in 1978 to 733 million in 1985, an average annual increase of 6.2 percent, to 1 billion tons in 1990, average annual increase of 7.8 percent, 1985–90, and to 1.377 billion tons in 1995. These forecasts indicate a near tripling of 1978 consumption of coal for generating electricity in about 16 years.

Use of coal by utilities follows a regional pattern, but this, too, has shown some change over the past 10 years and will change more dramatically in the next several years. The east north-central census region, including Illinois, Indiana, Michigan, Ohio, and Wisconsin consumes more than 30 percent of the steam coal used in the United States for generating electric power. Movement of coal by rail to this region is especially intensive in terms of ton-miles as most western coal used east of the Mississippi River is used in this region.

In five other areas; the Middle Atlantic, South Atlantic, Mountain, East South-Central, and West North-Central States, coal consumption by electric utilities in these divisions ranges between 10 and 20 percent of the total coal consumption. Coal consumption in New England has declined to virtually nothing over the past few years due to greater use of oil and nuclear in this area.

There is only one coal-burning utility in the Pacific region; Centralia in Washington State, and the outlook for greatly increased coal use in this region is guarded at best. In the west south-central region, however, coal is rapidly replacing oil and natural gas as the prime utility fuel. Consumption in this region, Texas, Arkansas, Louisiana,

and Oklahoma, has increased from nothing in 1969 to over 28 million tons in 1978.

Delivered coal prices are rising due to increased coal production costs and shipping rates. The cost of producing coal is going up, primarily because of Government regulations and inflation. Increases are more rapid in Eastern and Central States than in the Western coal producing States.

On June 28, I appeared at the House Budget Committee and testified. I have a copy of the testimony I presented at that hearing and I would like to enter it into the record of these proceedings.

Senator BENTSEN. Without objection, it will appear in the record at the end of your oral statement.

Mr. MILLER. Basically it consists of illustrations and examples of how Government regulations and general inflation have contributed to increased mining costs at the same time the cost of transporting coal is increasingly primarily as a result of inflation, of deteriorating transportation facilities that had to be upgraded, and capital requirements for anticipated upgrade and expansion of transportation equipment.

Senator BENTSEN. Mr. Miller, I will have to ask you to summarize in the next minute, if you will, because of our time limitations.

Mr. MILLER. OK, I'm just about there.

We still feel strongly that the economics clearly favor the use of coal over oil in most regions of the country. Unfortunately business decisions that must be made by our customers and potential customers cannot be made on an economic basis alone. As a result, Mr. Chairman, there is now insufficient demand for coal, the principal causes for which are Government regulations, which make coal utilization difficult, impossible, or unnecessarily expensive.

I would conclude by making a few observations about the future. I think the future is dependent by and large on what the Congress decides is best for the American people. You are not being asked to choose between energy and the environment, but you are being asked to strike a more proper balance between the two concerns.

This being the case, it is necessary to reexamine our national priorities and strike a balance more favorable for domestic energy development. If we are able to strike that better balance we still have to recognize that the cost of producing energy is going to rise.

Even so, coal will still remain a better buy and offers us far greater security than does imported oil. Of the utmost priority is the immediate conversion of existing generating facilities and industries who have the capability to burn coal and are now burning imported oil to switch to coal.

I believe there already exists authority to mandate certain conversions and I'm dismayed that the administration has not already taken the steps necessary to implement such conversions. Such actions would allow this country to immediately reduce the amount of oil being imported, or to use this oil needed in other areas.

I will stop then and be happy to answer any questions that you have. Thank you.

Senator BENTSEN. Thank you, Mr. Miller.

[The prepared statement of Mr. Miller, together with the National Coal Association report entitled "Survey of Captive Coal Shipments

by Rail for 1977," and his statement before the House Budget Committee on June 28, 1979, follow:]

PREPARED STATEMENT OF RICHARD E. MILLER

Mr. Chairman and members of the committee, My name is Richard E. Miller. I am Executive Vice President of AMAX Coal Company, a division of AMAX, Inc. AMAX is the third largest producer of coal in the United States. We operate coal mines in the Illinois Basin and in the Powder River Basin of Wyoming. I am here today to present coal industry comments and views on coal production, transportation, and utilization. In my formal statement today I will address two principal subjects centered on key aspects of our nation's coal distribution systems:

First, I will discuss key historical trends during the previous decade and examine related projections on coal production, transportation, and utilization.

Secondly, I will address some basic issues faced in seeking greater use of coal, focusing on critical areas for attention to ameliorate problems encountered in coal production, transportation, and utilization, with a view toward increasing the level of coal usage in our nation's energy marketplace.

Selected data on coal production, transportation, and utilization which support several references that I will make to statistitcal information in my testimony are presented in a series of tables and figures at the end of my formal statement.

I. TRENDS AND PROJECTIONS SHOW INCREASES IN COAL PRODUCTION AND UTILIZATION BY ELECTRIC UTILITIES ARE PLACING GREATER DEMANDS ON TRANSPORT SYSTEMS

A. Substantive variations are being experienced in national and regional levels of coal production in eastern, central and western portions of the U.S.

During the period 1969 to 1978, annual coal production in the United States has grown from 561 to 654 million tons, an increase of approximately 17 percent. This change in production at the national scale has not been distributed evenly across the eastern, central, and western coal producing states. In my testimony, the references to eastern coal production are intended to include all coal produced east of the Mississippi River except Illinois, Indiana, and Western Kentucky. These three coal areas, namely Illinois, Indiana, and Western Kentucky, are considered to represent the central coal producing states. The remaining states are grouped as western coal producing states which consist of all coal producing states west of the Mississippi River.

As I stated earlier, the trends in annual coal production in these regions have not been uniform. Unique variations have occurred in the eastern, central, and western groups of coal producing states. In the 1969 to 1978 period, eastern coal production has decreased from 397 to 360 million tons, a drop of 9 percent, and central coal production has decreased from 132 to 112 million tons, a drop of 15 percent. On the other hand, western coal production has risen from 31 to 183 million tons, an increase of 490 percent. This increase accounts for all of the growth in coal production in the United States during the previous decade, exceeding the decreases in the eastern and central coal producing states.

B. Large increases in coal tonnages originating from new mining areas in the west require major adjustments to surface transport systems

The growth in western coal production has created significant new transportation demands for rail carrier services. Coal is shipped long distances generally by rail and water carriers. Trucks account for a relatively small portion of the long distance, line-haul movement of coal. For instance, in 1977, 73 percent of the 476 million tons of coal consumed by electric utilities was transported by rail and water, and only 13 percent by truck movements to utility plants. The remaining 14 percent was used for electric power generation at mine-mouth plants located near the mines and moved short distances by conveyors, tramways, and private railroads from mines to plants.

The modal shares for line-haul transport of coal in 1977 to electric utility plants at other than mine-mouth locations amounted to: 60 percent by rail, nearly 25 percent by water, and the remaining 15 percent by truck or other modes. The nation's rail carriers transported nearly 248 million tons of coal to electric utili-

ties in 1977, a high volume of freight tonnage moving over greater distances in recent years due to the emergence of western coal into the marketplace.

Western low-sulfur coal has grown rapidly in importance in view of environmental regulations promulgated under the Clean Air Act and the suitability of using surface coal extraction technology which is particularly applicable to western coal mining since the overburden ratio is relatively low. It is interesting to note in this regard that whereas with respect to total U.S. production, surface mining of coal has nearly doubled during the previous decade; in the west, the level of surface production was seven and one-half times higher in 1978 compared with 1969 and surface mining accounts for more than 90 percent of western coal production. It is readily apparent that western coal should grow rapidly as a major source of future energy supply for the generation of electric power, given that the need to transport such coal over longer distances in order to reach electric utility markets in some regions will be adequately met by improved surface transport systems.

C. Electric utilities, the largest single group of coal consumers, used 480 million tons of coal in 1978, and are expected to exceed 1978 coal consumption by 53 percent in 1985, by 120 percent in 1990, and by 187 percent in 1995

Electric utilities are the major customer for coal produced in the United States as evidenced by the fact that nearly 78 percent of the coal consumed in the United States during 1978 was used for producing electricity. It is clear, therefore, that the transportation system required for moving coal in the United States must focus particularly on electric utility consumer destinations.

Coal consumption of 480 million tons by electric utilities in 1978 is forecast to grow to 733 million tons in 1985 (up 53 percent), to 1.066 billion tons in 1990 (up 120 percent), and to 1.377 billion tons in 1995 (up 187 percent); nearly tripling 1978 consumption of coal for generating electricity in about 16 years.

In terms of regional distribution of steam coal to electric utilities, it is noteworthy that less than 10 percent of total U.S. coal production is consumed by electric utilities in each of three U.S. census divisions—New England, Pacific, and West South Central states. West South Central includes Arkansas, Louisiana, Oklahoma, and Texas. In another five of the U.S. census divisions, coal consumption by electric utilities ranges between 10 and 20 percent of total U.S. consumption in each case. These divisions are Middle Atlantic, South Atlantic, Mountain, East South Central, and West North Central states. East South Central includes Alabama, Kentucky, Mississippi, and Tennessee. West North Central includes the Dakotas, Iowa, Kansas, Minnesota, Missouri, and Nebraska. The division which consumes the highest tonnage of coal annually in the nation is East North Central which is located in the Great Lakes area and includes Illinois, Indiana, Michigan, and Nebraska. The division which consumes the highest tonnage of coal annually in the nation is East North Central which is located in the Great Lakes area and includes Illinois, Indiana, Michigan, Ohio, and Wisconsin. These states consume annually more than 30 percent of the steam coal used in the nation for generating electric power. Therefore, movement of coal by rail is now especially intensive in terms of ton-miles having utility consumer destinations located in the states bordering on the Great Lakes.

These East North Central states have been heavy consumers of steam coal consistently from year to year over the past decade, growing from 118 to 145 thousand tons between 1969 and 1978. Growth in steam coal consumption from 1969 to 1978 is also especially noteworthy in five other relatively high consumer divisions: South Atlantic, from 64 to 86 thousand tons; East South Central, from 47 to 64 thousand tons; West North Central, from 22 to 62 thousand tons; Mountain, from 11 to 45 thousand tons; and West South Central, from a negligible amount to 28 thousand tons.

From the viewpoint of costs incurred by electric utility customers, coal prices are related significantly to both the regional characteristics of the steam coal in terms of its physical properties (heat value, sulfur content, etc.) and shipping rates. In 1979 for instance, price of eastern coal having a heat value of 11 to 13 thousand Btu./lb. were typically in a range from $21 to $35 per ton (FOB mine). This compares with prices of $18 to $28 per ton (FOB mine) for coal having a heat value of 10.5 to 12 thousand Btu/lb. in the central states and to two ranges of prices for western coal: $16 to $20 per ton for western coal having a heat value of 10 to 11.5 thousand Btu/lb. and $7 to $10 per ton for western coal having a heat value of 8 to 10 thousand Btu/lb. (FOB mine). Thus, it is apparent that coal prices are closely related to the intrinsic properties of the coal in a region, particularly with respect to heat value.

Delivered coal prices are rising due to increased coal production costs and shipping rates. The cost of producing coal is going up, primarily because of government regulations and inflation. Increases are more rapid in eastern and central states than in the western coal producing states. The cost of transporting coal is increasing primarily as a result of inflation, deteriorating transportation facilities and capital requirements for anticipated upgrading and expansion of transportation equipment.

The delivered price of coal shipped to electric utilities varies widely among the nine U.S. census divisions. Reports to the Federal Energy Regulatory Commission by electric utilities show that the delivered price of coal for electric power generation at the national scale has risen from $6.13 per ton in 1969 to $23.75 per ton in 1978. Further, the regional prices for delivered coal in 1978 ranged from $10.28 per ton in the Mountain states, $10.63 per ton in the West South Central states, and $12.49 per ton in the Pacific states upward to $38.37 per ton in the New England states. In the other U.S. census divisions the delivered price of steam coal varied within a range closer to the national average of $23.75 per ton, i.e.: $16.99 per ton in the West North Central states; $26.18 per ton in the East North Central states; $27.43 per ton in the East South Central states; $28.98 per ton in the Middle Atlantic states; and $31.33 per ton in the South Atlantic states. These statistics on the delivered price of coal incorporate transportation costs by all transport modes involved and transport rates in force. They also are prices aggregated across the varying qualities of coal utilized ranging from lower heat value lignite to higher heat value bituminous coal which may be twice as high in quality in terms of the Btu/lb. output of the coal as it is used to generate electricity.

Mr. Chairman, a recent study by the National Coal Association has analyzed various regional characteristics in coal transportation by rail. NCA found that average rail rates of $3.76 per ton were experienced for coal produced in the central states, $7.24 per ton for eastern coal, and $8.13 per ton for western coal on the coal shipments originating in these regions during 1977. The average rail rate for transporting coal at the national scale in 1977 was $6.27 per ton. I ask that you include the NCA study report in your record since it furnishes details on these points.

It should be noted that these rates are simply averages and are, therefore, not directly applicable to any specific coal shipments. For example, unit train rates of $12 to $18 per ton are now prevalent for coal shipments from mines in western states (Montana and Wyoming) to electric utility plants in some West South Central states (Arkansas and Texas) and in certain East and West North Central states (Illinois, Indiana, and Minnesota). Further, these rates are scheduled for general increases of 9 to 11 percent during the second half of 1979, in addition to other recent rate hikes to cover rising fuel costs. During the period 1969 to 1978, rail freight rates for transporting coal increased 128 percent. This is an increase of more than 14 percent per year during the past decade. Rates for all freight moved by rail increased 113 percent during these years.

In the same period, electirc utility revenues increased from 1.54 cents per kilowatt-hour to 3.41 cents per kilowatt-hour, an overall increase of 121 percent. Thus, the 1969 to 1978 change in average coal transportation rates for rail transport of coal is similar to the change in the price of electricity during the same period.

The price of electricity is going up primarly as a result of inflation, increasing needs for replacement capital and environmental regulations. One result has been a new market for competitive coal imports. If we are not able to improve economics of coal production and utilization, this coal import market could cause reductions in the tonnages of domestic coal consumed in the nation's energy marketplace. Coal imports of nearly 3 million tons were experienced in 1978. In comparison, during the past ten years annual coal imports have been much lower; about 40 to 130 thousand tons per year from 1969 to 1973 and approximately 1.0 to 2.1 million tons per year from 1974 to 1977.

On the other hand, coal exports have experienced a serious decline in 1978, down to 40 million tons whereas in the previous nine years annual coal exports have ranged between 53 to 71 million tons. This also reflects, in part, the negative effects of higher production and transportation costs. Rail transport costs for moving export coal from mines to deepwater ports in the east and on the Gulf of Mexico are paid by coal exporters inasmuch as foreign customers purchase coal at FOB port prices.

A combination of diminished levels of coal export tonnages and potential increases in the penetration of markets in the United States by coal imports un-

derscore the criticality of holding down costs for producing and transporting domestic coal in order not to erode the overall possibilities for development our nation's coal resources to serve both domestic and international markets.

II. FIRM NATIONAL COMMITMENT TO GREATER USE OF COAL AND REDUCTION OF COSTLY GOVERNMENTAL POLICIES AND REGULATIONS AFFECTING COAL USAGE ARE ESSENTIAL FOR EFFECTIVE PLANNING AND FINANCING OF REQUISITE COAL PRODUCTION, TRANSPORTATION, AND UTILIZATION PROGRAMS

A. Greater use of coal in supplying the Nation's energy needs can help the Nation's economy

There is widespread agreement that our nation is excessively dependent on insecure foreign sources of energy, and that our domestic sources of petroleum will not keep pace with future demands. This leaves our nation vulnerable to economic and social disruption from cutoff of supplies and rapid price increases, causes an excess outflow of U.S. dollars and jobs, and limits our freedom of action in international affairs.

Also, there is growing recognition that the nation has domestic energy reosurces that could be used to extricate us from our unacceptable dependence on foreign energy sources. Our domestic coal reserves are the most readily available means to accomplish this goal. Yet, at the present time, the demand for coal is slack and the nation now has about 100 million tons per year of productive capacity—over and above the 725 million tons now being produced—which is unused because of the lack of demand for coal. In addition to security of supply, coal has important price advantages. The capital costs of building coal-fired electric utility plants and associated environmental controls are higher for coal than other fuels, but the fuel costs themselves are much lower. In February, 1979, the average price of residual oil delivered under contract to utilities was $2.42 per million Btu. The average cost of natural gas was $1.59 per million Btu. The comparable price for coal delivered under long-term contract was $1.14 per million Btu.

Even given the costs associated with using coal, the economics clearly favor the use of coal over oil in most regions of the nation. Unfortunately, the business decisions that must be made by our customers and potential customers cannot be made on an economic basis alone. As a result, Mr. Chairman, there is now insufficient demand for coal, the principal causes for which are government policies and regulations which make coal utilization difficult, impossible, or unnecessarily expensive.

The facts show that coal is demand limited. Much more could be produced if there were a demand for it. This year we expect coal consumption in the U.S. and for export to run about 720 million tons and production to be about 725 million tons. These figures reflect growth over 1977 of less than 3 percent. Demand for coal will increase by about 5 to 7 percent per year through 1985 if the 190 coal-fired electric power plants planned to come on line from now to 1985 are permitted to be constructed and operated. Industrial demand for coal is growing very slowly, due principally to stringent EPA regulations and to confusion as to the Administration's policies with respect to use of natural gas versus oil versus coal.

By 1985, coal will only be supplying about 20 percent of our nation's energy needs, compared to just under 19 percent now, which is far less than its potential and far less than needed if we are to significantly reduce our dependence on expensive, insecure, imported energy. Increasing our commitment to, and use of, coal can:

Reduce the inflationary impact of rising prices of alternate energy sources.

Contribute significantly towards the reduction of our balance of payments deficit.

Assure our nation of a stable supply of energy to meet the needs of a growing economy.

B. Government regulations have cost implications affecting domestic coal production and utilization.

Despite the recognized need to increase our use of coal, government regulations have unnecessarily pushed up the costs of producing and using coal. To alleviate such adverse actions taken by the government, I will briefly summarize some recommendations for changing certain restrictive requirements under extant regulations.

1. The Federal Government should take immediate steps under existing law to permit increased coal use provided that such coal use does not violate national ambient air quality standards set to protect public health. Opportunities to use coal in existing facilities should be evaluated on a case-by-case basis.

2. The Administration should support, and the Congress should pass, legislation to extend the period for temporary modification of State Implementation Plans for at least five years, require new reviews of these plans to identify restrictions not necessary to meet standards set to protect public health, and reduce obstacles to plan modifications and approvals, in order to give longer-term relief.

3. The Clean Air Act should be amended to permit use of the most cost-effective methods of meeting ambient air quality standards.

4. Either by budgetary and administrative action or new legislation, if necessary, the Federal Government should provide more accurate and objective air quality monitoring and modeling.

5. Similar actions should be taken to speed development of objective scientific evidence on the impact of air quality on public health and on the long-term effects of increased coal use.

6. Existing ambient air quality standards should be reassessed on a faster timetable with a far greater effort than has been devoted to this task to date. All determinations and judgments made with respect to Clean Air Act regulations and standards should be based on objective scientific evidence.

7. Any new or revised regulations proposed by EPA should be accompanied by thorough analysis of costs, risks, and benefits so that the public can understand the full implications of these proposals. Other agencies with different objectives, such as DOE, should evaluate EPA proposals.

8. Regulations recently issued by the DOI under the Surface Mining Control and Reclamation Act should be reconsidered and made more realistic.

9. The DOI should be instructed to develop a workable program for leasing Federal coal lands, avoid attempts to apply new program requirements to existing leases and preference rights, correct the adverse impact of existing "diligent development" regulations, and reduce the adverse impact of DOI's current royalties policies on coal costs and competitiveness.

10. The time required to obtain government permits for coal mines and coal-fired power plants should be reduced.

11. Tax laws should be modernized to allow U.S. industry adequate means of recovering capital investments. Further, U.S. industry should be allowed immediate recovery of capital investments related to conversion from oil or gas to coal and to producing coal, as well.

12. The DOI and EPA should be instructed to withhold action on their various proposals and requirements which would make it impossible to develop or use large shares of the nation's coal reserves.

C. Transportation policies of the government have impacts on the delivered prices of coal

Coal producers and customers are dependent on rail transport to move over 65 percent of the coal mined in the U.S. to market. In many cases the coal shipper has no economic and practical alternative to the rail transport mode. As a result, any proposal which would substantially increase the cost of transporting coal by rail must be carefully analyzed to determine its ultimate effects on the demand for coal.

Because nearly two-thirds of the nation's coal production is moved by rail, and 85 percent of the coal shipped by rail is captive to the rail transport mode, the coal industry and the coal producers and customers that ship coal are, to a large extent, non-competitive transportation users relying heavily on rail carriers for transporting coal to electric utilities, industrial plants, and deepwater ports for export purposes. Thus, on June 6, 1979, when testifying on S. 796, a pending bill to deregulate the rail carrier industry, the coal industry supported those measures which were centered on achieving increases in competitiveness and reductions in costs for the rail carrier industry, but due to the lack of effective surface transportation alternatives available to coal shippers, urged retention of rate regulation in relation to the movement of coal by rail carriers.

Another example of government policy that would increase coal transportation costs substantially is that expressed to the ICC by the DOT in the past year. DOT officials stated that "To assure that energy is appropriately priced and resources are properly allocated, DOT believes that the Commission should estab-

lish the principle that, in general, the maximum rate on coal is one that will equate the delivered price of coal per Btu to the delivered price per Btu of any other available fuel." DOT states further "Such a ceiling on transportation rates for coal would encourage a shift by utilities toward the use of coal and away from less desirable sources of energy."

There is no justification for a policy which assumes that differences in alternative fuel prices should be wiped out by: (a) government action, or (b) higher transportation rates for the lower priced fuel. Far from encouraging a shift towards coal, this policy would encourage the use of oil, natural gas, or in the coastal areas, the greater use of imported oil.

All such Federal actions which could unnecessarily increase the costs of transporting coal must be carefully evaluated. Just as it is required that transport rates should be examined closely to see whether they are reasonable and not unduly discriminatory, the costs of producing and using coal also must be assessed to determine if they are justified and represent the best balance among competing national objectives.

Mr. Chairman, this recitation of trends, projections, and issues involving coal production, transportation, and utilization and the accompanying tables and figures presenting basic data for supporting statistical information cited in my formal statement furnishes details on which I am prepared to elaborate as you wish.

TABLE 1.—ANNUAL COAL PRODUCTION IN THE UNITED STATES, 1969 TO 1978

[Millions of tons]

	Sector[1]			
	Eastern	Central	Western	U.S.[2] total
1969	397.1	132.3	31.1	560.5
1970	420.5	140.2	42.3	602.9
1971	375.7	127.6	48.9	552.2
1972	389.3	143.8	62.3	595.4
1973	376.5	140.5	74.8	591.7
1974	379.0	133.8	90.6	603.4
1975	397.6	141.0	109.8	648.4
1976	407.4	136.4	134.9	678.7
1977	395.2	133.6	163.5	691.3
1978	359.7	111.5	182.6	653.8

[1] Eastern includes all coal production east of the Mississippi River, except central coal production. Central includes all coal production in Illinois, Indiana, and western Kentucky. Western includes all coal production west of the Mississippi River.

[2] Total column may differ from sum of other columns due to rounding.

Source: U.S. Department of Energy.

TABLE 2.—SURFACE AND UNDERGROUND COAL PRODUCTION, 1969 TO 1978

[Millions of tons]

	Sector[1]							
	Eastern		Central		Western		U.S.[2] total	
	Surface	Underground	Surface	Underground	Surface	Underground	Surface	Underground
1969	111.5	285.6	80.2	52.0	21.6	9.5	213.4	347.1
1970	145.2	275.3	86.6	53.6	32.3	10.0	264.1	338.8
1971	156.3	219.5	80.5	47.1	39.5	9.4	276.3	275.9
1972	146.4	243.0	92.1	51.7	52.8	9.4	291.3	304.1
1973	142.9	233.6	84.8	55.7	64.7	10.0	292.4	299.4
1974	166.3	212.7	79.4	54.4	80.5	10.2	326.1	277.3
1975	173.4	224.1	83.9	57.1	98.2	11.6	355.6	292.8
1976	180.5	226.7	81.1	55.4	122.2	12.6	383.8	294.9
1977	196.8	198.4	80.3	53.3	148.3	14.3	425.4	266.0
1978	175.8	183.9	68.5	43.0	167.0	15.6	411.3	242.5

[1] Eastern includes all coal production east of the Mississippi River, except central coal production. Central includes all coal production in Illinois, Indiana, and western Kentucky. Western includes all coal production west of the Mississippi River.

[2] Total column may differ from sum of other columns due to rounding.

Source: U.S. Department of Energy.

TABLE 3.—ANNUAL COAL CONSUMPTION IN THE UNITED STATES, 1969 TO 1978

[Millions of tons]

	Electric utilities	Coking industry	Other industry	Other retail	U.S. [1] total
1969	308.5	92.9	90.9	14.7	507.3
1970	318.9	96.0	88.3	12.1	515.6
1971	326.3	82.8	74.2	11.4	494.9
1972	348.6	87.3	72.0	8.7	516.8
1973	386.9	93.6	67.2	8.2	556.0
1974	390.1	89.7	64.7	8.8	552.7
1975	403.2	83.3	62.5	7.3	556.3
1976	447.0	84.3	60.5	6.9	598.8
1977	475.7	77.4	60.4	7.0	620.5
1978	480.1	71.1	58.9	7.9	618.0

[1] Total column may differ from sum of other columns due to rounding.

Source: U.S. Department of Energy.

TABLE 4.—COAL CONSUMPTION BY ELECTRIC UTILITIES, 1969 TO 1978

[Thousands of tons]

	New England	Middle Atlantic	South Atlantic	East north-central	East south-central	West north-central	West south-central	Mountain	Pacific	U.S.[1] total
1969	5,005	43,664	63,818	118,029	47,059	22,189	1	10,712	----------	310,477
1970	3,480	44,321	64,117	117,635	50,345	26,267	1	14,402	----------	320,568
1971	2,669	43,804	66,271	119,889	50,952	28,037	10	16,035	----------	327,667
1972	1,332	42,220	71,152	125,161	56,969	31,582	2,270	20,092	----------	350,778
1973	1,121	46,967	76,228	132,544	63,225	35,493	4,733	23,899	3,741	387,951
1974	2,095	44,898	78,385	133,025	61,359	36,981	5,197	27,211	3,192	392,343
1975	1,794	45,034	75,752	137,605	59,931	40,722	9,044	31,882	4,265	406,029
1976	760	46,063	85,646	142,471	66,992	49,664	12,351	38,655	4,107	446,709
1977	981	45,660	89,391	146,850	66,781	57,852	16,948	47,067	5,621	477,151
1978	802	45,128	85,941	144,951	64,346	62,369	28,144	45,469	4,503	481,652

[1] Total column may differ from sum of other columns due to rounding.

Source: U.S. Department of Energy.

TABLE 5.—TYPICAL F.O.B. MINE PRICES FOR STEAM COAL IN 1979

[Prices in dollars per ton]

Heat value (Btu per pound)	Ranges of 1979 coal prices by sector [1]		
	Eastern	Central	Western
8,000 to 10,000			7 to 10.
10,000 to 11,500			16 to 20.
10,500 to 12,000		18 to 28	
11,000 to 13,000	21 to 35		

[1] Eastern includes all coal production east of the Mississippi River, except central coal production. Central includes all coal production in Illinois, Indiana, and western Kentucky. Western includes all coal production west of the Mississippi River.

Source: "Coal Week," vol. 5, No. 27, July 2, 1979. McGraw-Hill, Inc.

TABLE 6.—DELIVERED PRICE OF COAL SHIPPED TO ELECTRIC UTILITIES, 1969 TO 1978

[Dollars per ton]

	New England	Middle Atlantic	South Atlantic	East north-central	East south-central	West north-central	West south-central	Mountain	Pacific	U.S.[1] total
1969	9.11	7.37	7.00	5.92	4.73	5.34	NA	3.98	----------	6.13
1970	10.54	8.83	8.87	6.89	5.25	5.71	NA	3.37	----------	7.13
1971	12.06	9.62	9.76	7.87	6.49	6.04	2.92	3.44	----------	8.00
1972	13.81	9.97	10.06	8.58	7.16	6.57	2.94	3.95	----------	8.44
1973	14.06	11.35	10.95	9.59	8.13	7.10	1.84	4.78	5.15	9.25
1974	27.33	20.54	22.16	15.28	12.22	8.90	2.38	5.51	5.62	15.47
1975	32.60	24.14	23.52	17.73	17.78	11.54	2.97	6.13	9.16	17.64
1976	33.96	24.72	24.32	19.04	19.19	12.61	3.93	7.07	12.19	18.40
1977	34.13	25.28	27.67	21.89	22.61	15.35	9.67	9.03	11.72	20.88
1978	38.37	28.98	31.33	26.18	27.43	16.99	10.63	10.28	12.49	23.75

[1] Total column may differ from sum of other columns due to rounding.

Source: Federal Energy Regulatory Commission

TABLE 7.—AVERAGE RATES FOR TRANSPORTING COAL BY RAIL IN 1977

Coal traffic originating sector [1]	Average rail rates [2] (per ton)	Percentage in interstate movement (percent of tonnage)
Eastern	$7.24	83
Central	3.76	56
Western	8.13	82
U.S. total	6.27	75

[1] Eastern includes all coal production east of the Mississippi River, except central coal production. Central includes all coal production in Illinois, Indiana, and western Kentucky. Western includes all coal production west of the Mississippi River.

[2] Rate information based on sample data acquired from coal producers that accounted for 42 percent of the total coal tonnage produced in 1977 across the United States by 386 mines.

Source: "Survey of Captive Coal Shipments by Rail for 1977," NCA, May 1979.

TABLE 8.—COAL EXPORTS AND IMPORTS, 1969 TO 1978

[Millions of tons]

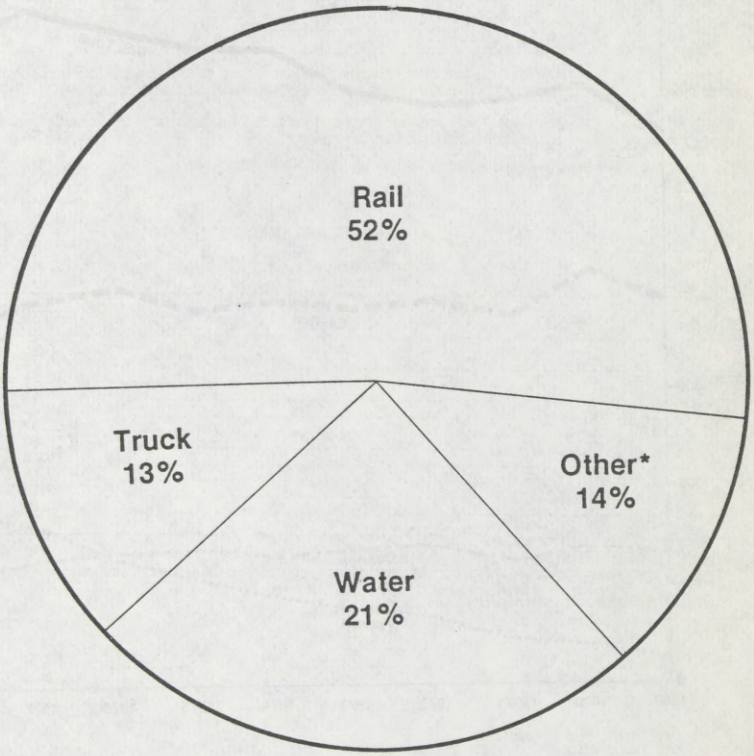
	Exports [1]	Imports [2]
1969	56.23	0.11
1970	70.94	.04
1971	56.63	.11
1972	56.00	.05
1973	52.87	.13
1974	59.93	2.10
1975	65.67	.94
1976	59.41	1.20
1977	53.69	1.65
1978	39.83	2.95

[1] Exports to Canada, Europe, and Japan, plus certain other foreign markets.

[2] Imports from Australia, Canada, Poland, and South Africa, plus certain other foreign sources.

Source: U.S. Department of Energy.

FIGURE 1
SHARES OF TOTAL COAL SHIPMENTS TO
ELECTRIC UTILITIES BY TRANSPORT MODES IN 1977



*Conveyor, Pipeline, Tramway, and Private Railroad, to mine-mouth plants.

Source: U.S. Department of Energy

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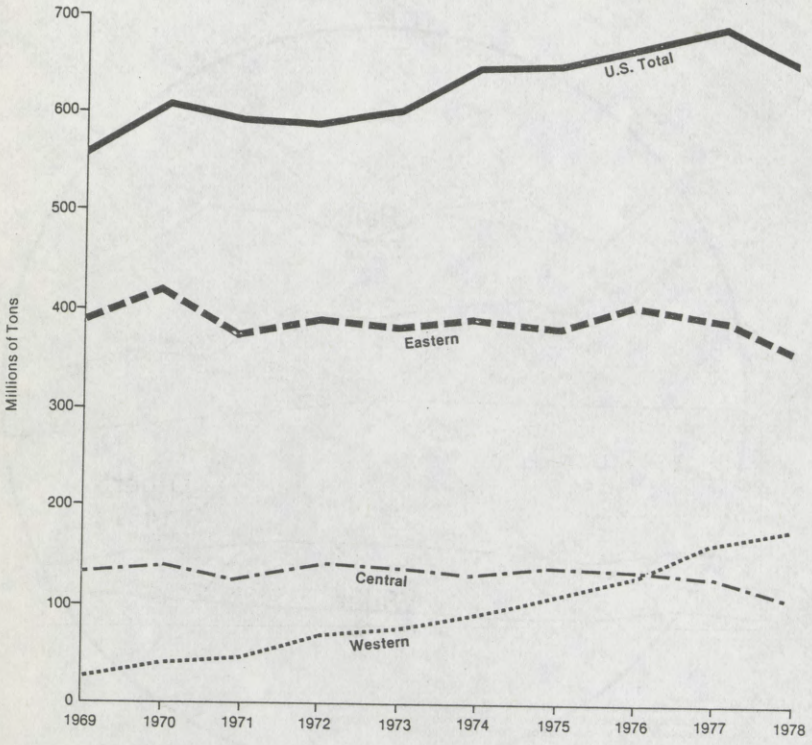
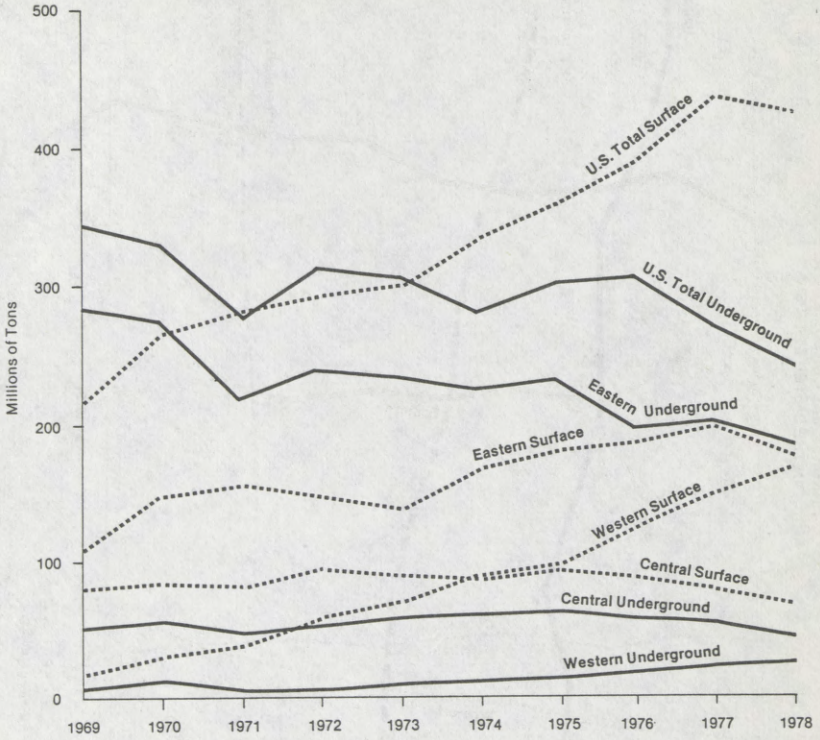
FIGURE 2
ANNUAL COAL PRODUCTION
IN THE UNITED STATES



NOTE: Eastern includes all coal production east of the Mississippi River, except Central coal production.
Central includes all coal production in Illinois, Indiana and Western Kentucky.
Western includes all coal production west of the Mississippi River.

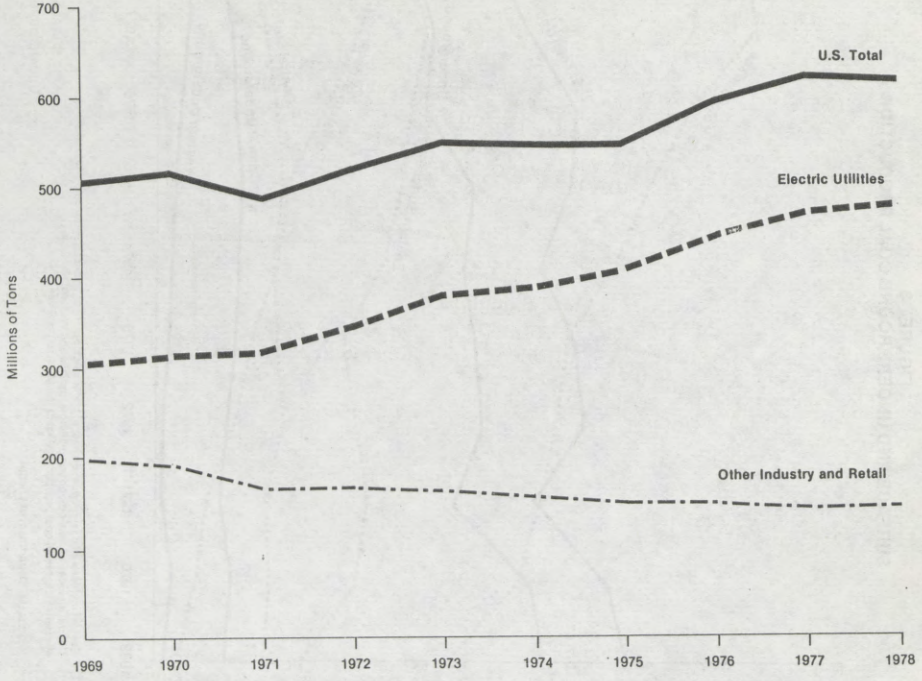
FIGURE 3
SURFACE AND UNDERGROUND COAL PRODUCTION



NOTE: Eastern includes all coal production east of the Mississippi River, except Central coal production.
Central includes all coal production in Illinois, Indiana and Western Kentucky.
Western includes all coal production west of the Mississippi River.

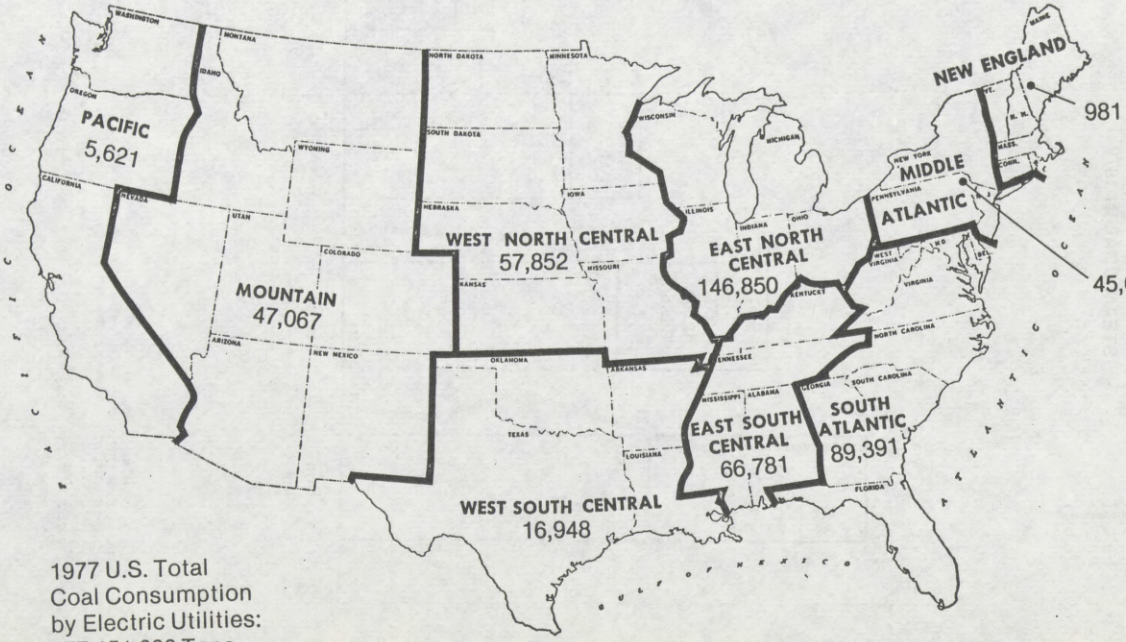
Source: U.S. Department of Energy

FIGURE 4
ANNUAL COAL CONSUMPTION
IN THE UNITED STATES



Source: U.S. Department of Energy.

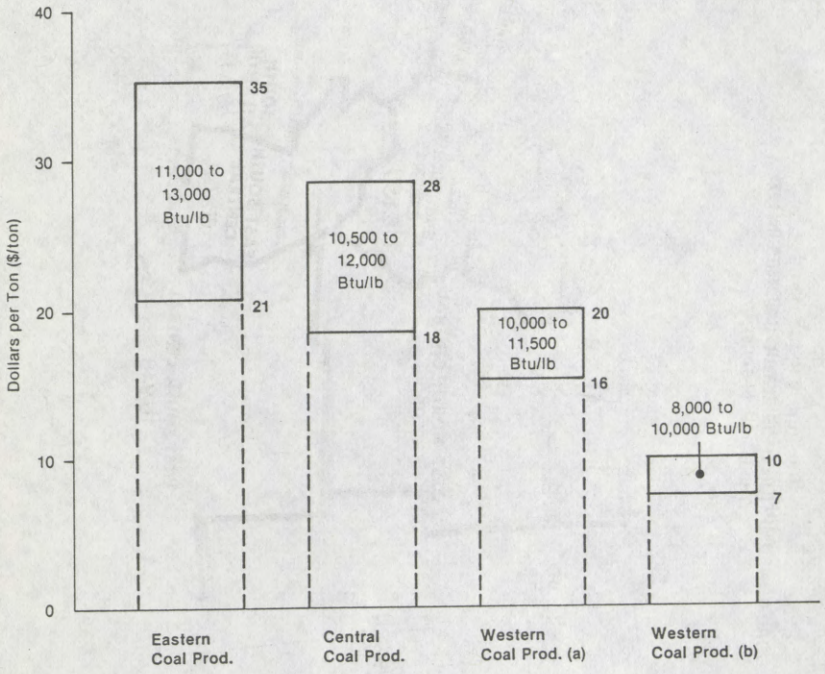
FIGURE 5
COAL CONSUMPTION BY ELECTRIC UTILITIES IN 1977
(Thousands of Tons)



1977 U.S. Total
Coal Consumption
by Electric Utilities:
477,151,000 Tons

Source: Bureau of Census geographic divisions
U.S. Department of Energy.

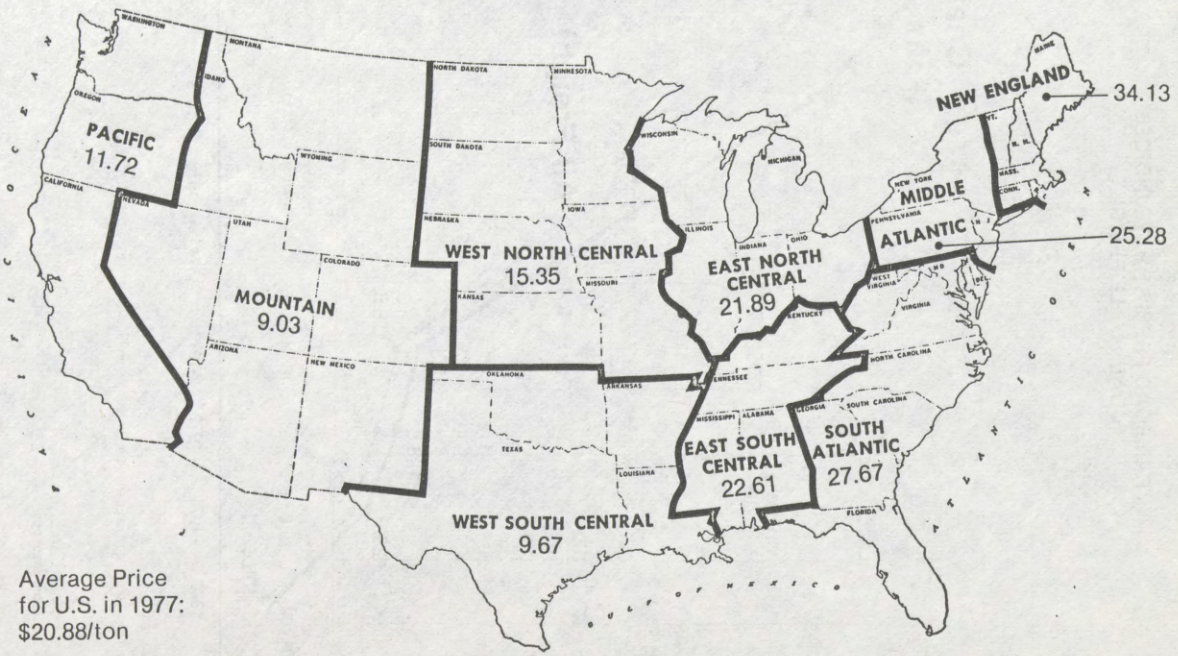
FIGURE 6
TYPICAL FOB MINE PRICES FOR
STEAM COAL IN 1979



NOTE: Eastern includes all coal production east of the Mississippi River, except Central coal production.
Central includes all coal production in Illinois, Indiana and Western Kentucky.
Western includes all coal production west of the Mississippi River.

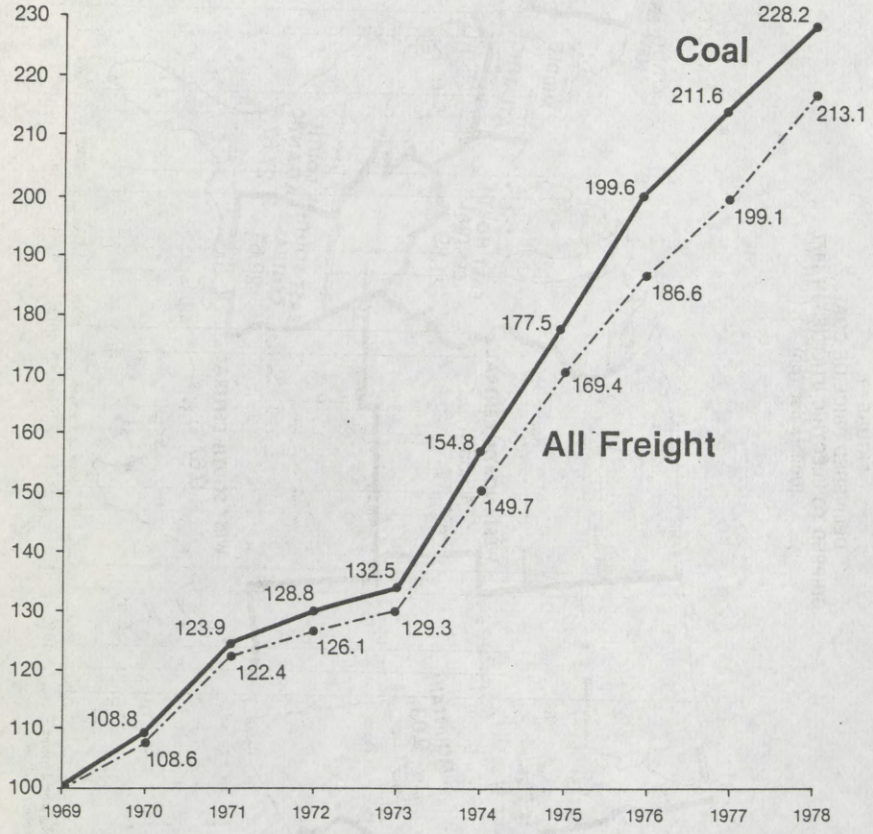
Source: "Coal Week," Vol. 5, No. 27, July 2, 1979
McGraw-Hill, Inc.

FIGURE 7
DELIVERED PRICE OF COAL
SHIPPED TO ELECTRIC UTILITIES IN 1977
(Dollars per Ton)



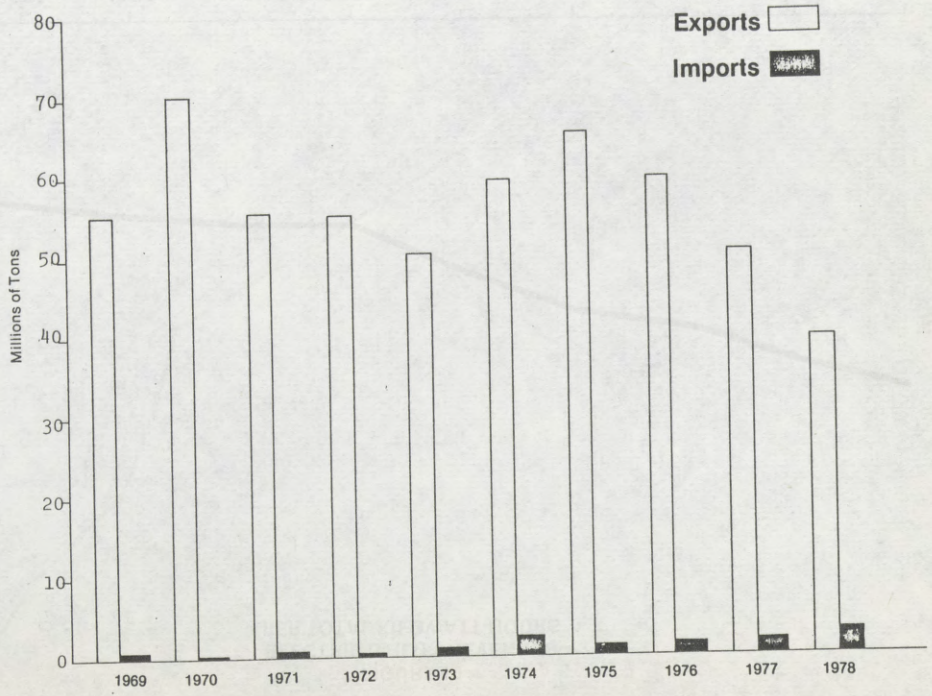
Source: Bureau of Census geographic divisions
U.S. Department of Energy.

FIGURE 8
RAILROAD FREIGHT RATE INDICES
COAL vs. ALL FREIGHT



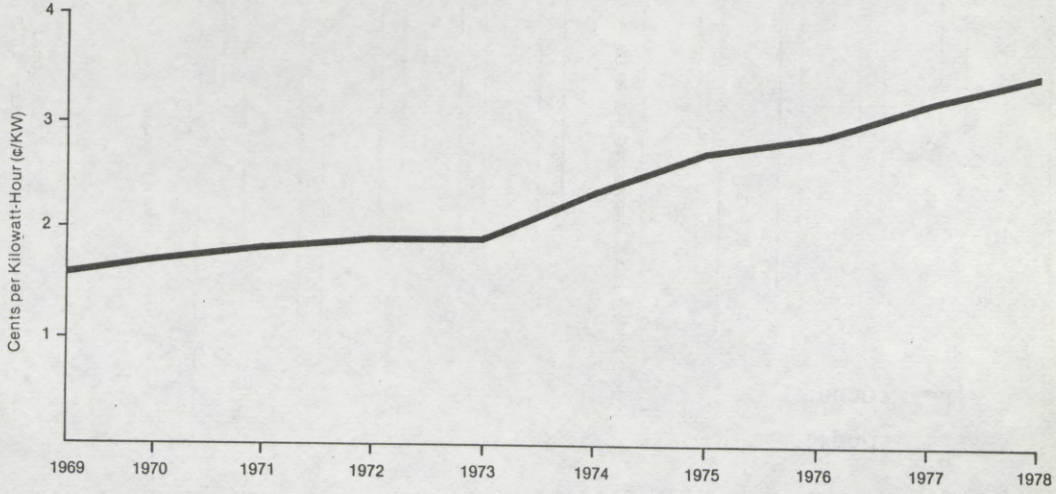
Source: Bureau of Labor Statistics

FIGURE 9
COAL EXPORTS AND IMPORTS



Source: U.S. Department of Energy

FIGURE 10
ELECTRIC UTILITY REVENUES
PER TOTAL KILOWATT-HOURS



Source: U.S. Department of Energy

NATIONAL COAL ASSOCIATION

SURVEY

OF

CAPTIVE COAL SHIPMENTS BY RAIL

FOR 1977

National Coal Association
May, 1979

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EXECUTIVE SUMMARY

- Coal producers have historically depended on the railroads to transport most of their products from mine to markets. In many cases, rail transport is the only available form of transportation. Projected increases in coal production and use will increase this dependence.

- The "captive shipper" issue is the single most important among the many issues raised by proposed rail deregulation legislation.

- The survey conducted by NCA in May 1979 revealed that nearly 85 percent of the coal produced in the U.S. and shipped by rail was captive.

- The survey pointed out that the captive shipper problem existed in every coal producing region, market, and movement.

- Coal shipments to electric utilities, the largest consumer for coal, were found 83 percent captive to rail.

- Interstate movement, representing nearly 75 percent of coal surveyed, was 87 percent captive. Approximately 89 percent of the unit train shipment was captive.

- The western coal producing states were found most vulnerable to captivity. Restricted access to highways and waterways and shipment of large quantities over long distances are all contributing factors to western coal being 98 percent captive to rail.

- The transportation alternative to rail transport of coal would cost the coal shippers approximately 3 times or 300 percent of the 1977 average rail cost.

BACKGROUND

In 1977, about 691 million tons of coal were produced in the U.S., and production is expected to be about 715 million tons in 1979. Two-thirds of this coal production is transported by rail. Projections made by the Department of Energy indicate that a total of 990 million to 1,188 million tons of coal will be produced in 1985. With the expected increase in production, railroads will probably be called upon to haul 50 percent more coal than at present and more than double their current western traffic.

Since coal shippers are heavily dependent upon rail transportation, there has been considerable interest in proposals for railroad deregulation. Any changes resulting from deregulation which affect coal hauling rates or availability or quality of service can have a major impact on coal producers and users.

Among the issues raised by proposed deregulation legislation, the "captive shipper" situation has emerged as the single most important issue. Reasons are:

- There are no alternative modes of shipment and no alternative carriers for a large share of the coal now being produced and used.
- "Captive shippers" would face potentially large rate increases.
- The shipper would bear the burden of proof as to "captivity" and injury for higher rates and the higher rates would remain in effect while relief was sought.

The Administration's legislative proposal (S. 796) presumes the existence of competition for a shipper's business.

NCA SURVEY

Relatively little data has been assembled on the extent of coal shipper captivity. In an effort to improve the quality of data on this issue, NCA conducted a survey designed to develop estimates of the extent and potential effects of the "captivity" problem.

- The Approach:

Data covered in the survey are for 1977 since that was the latest 12-month relatively "normal" period for which data are available. The 1978 coal shipments were interrupted by the

prolonged coal strike during the first quarter and again by the rail strike during the latter part of the year. Coal transportation patterns may have been affected during that period for the same reason.

Information collected in the survey focused on coal shipments by rail. Data were broken down by states, markets, and types of movements. Captive portions of the rail shipments for the same categories were also collected.

If captive conditions existed during the time period in question, companies were asked to supply average rail cost and the estimated additional cost that would be required for switching from existing rail carriers to the next best alternative.

. Definition of Captivity:

There is little agreement as to the exact definition of "captive." For purposes of the survey, NCA developed a definition which would (a) be accepted as objective and (b) include what NCA regards as the core of the captivity problem -- the possible injury to the unprotected shipper. We recognize that the definition is somewhat arbitrary. The definition of 'captivity' is based on the two key elements:

(1) the element of market control of the carrier over the shipper, as measured by the 'single rail carrier' criterion; and

(2) the kind of transportation alternatives available to the shipper or the mine. For example, we feel that captivity exists when the transportation alternatives are so costly that adopting them would cause serious injury to the competitive position of the shipper.

Therefore, we have defined captivity to exist when both of the following conditions are present:

(1) a single rail carrier represents the only present transportation alternative for the entire shipment, or a substantial share of the route, for the shipment in question; and

(2) the "next best" future transportation alternative (other rail carrier, motor or water carrier) is one which would cause injury to the shipper's competitive position if forced to adopt that alternative.

. Discussion of Survey Findings:

A total of 43 companies responded to the survey. These companies, which reported coal production in 17 states, produced a total of 291 million tons in 1977. This is about 42 percent of 1977 total U.S. production. According to the NCA survey, two-thirds of the tonnage, or 193 million tons, were shipped by rail. Captivity conditions were found to exist in a high degree. Nearly 85 percent of the coal shipments by rail were captive. Summary data on rail shipments of coal from the survey are shown below.

Type of Market	Percent Captive	
. Utility	83.30%	
. Steel	85.83	
. Industrial	75.05	
. Exports	93.19	
Total	84.60%	Percent of Total Rail Shipments
Unit Train:	89.22%	40.55%
Interstate movements:	87.37	74.60
Intrastate movements:	69.10	25.40

Average Rail Cost: $ 6.27 per t
Average Alternative Cost (next best): $ 18.69 per t
Alternative reported available (including higher cost alternative) - 40.71% of total tonnage.

A. The shipment of coal is greatly dependent on captive rail transport

- Approximately 291 million tons of coal production were reported to the survey, representing 42 percent of 1977 total U.S. production.
- Two-thirds of the reported tonnage or 193 million tons was shipped by rail.
- Nearly 85 percent of the coal produced in the U.S. and shipped by rail was captive.
- The average length of haul for rail shipments of coal was 247 miles.

- The next best transportation alternative, to which 41 percent of all respondents gave an answer, would cost coal shippers almost 300 percent of the 1977 average rail cost.

B. Captive shipper problems generally are serious in all types of coal markets

- Electric utilities, which received 71 percent of rail shipments in 1977, were 83 percent captive.

- Coal shipments to steel plants, which accounted for nearly 13 percent of total rail shipments of coal, were 86 percent captive.

- Approximately 75 percent of coal shipments by rail for industrial use was captive.

- The export market, which accounted for 10 percent of rail shipments in 1977, was shown to have the highest percent captivity in all market types -- 93 percent captive.

C. The magnitude of captivity varied among coal producing regions

1. Western Region - Includes coal producing states west of the Mississippi River.

- Approximately 50 million tons of coal produced in the Western Region was reported to the survey, representing 7.2 percent of 1977 total U.S. production.

- Sixty percent of the reported tonnage or 30 million tons of coal was shipped by rail.

- More than 98 percent of the coal produced in the Western Region and shipped by rail was captive.

- The average length of haul for rail shipments of coal in this region was 311 miles.

- The next best transportation alternative would cost coal shippers in the Western Region 230.6 percent of the 1977 average rail cost.

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2. Central Region - Includes Illinois, Indiana, and West Kentucky.

- Approximately 94 million tons of coal produced in the Central Region was reported, representing 13.6 percent of 1977 total U.S. production.

- Nearly 62 percent of the reported tonnage or 58 million tons of coal was shipped by rail.

- About 58 percent of the coal produced in the Central Region and shipped by rail was captive.

- The average length haul for rail shipments of coal in this region was 134 miles.

- The next best transportation alternative would cost coal shippers in the Central Region 260.9 percent of the 1977 average rail cost.

3. Appalachian Region - Includes all other states not covered in the 2 above mentioned regions.

- A total of 147 million tons of coal produced in the Appalachian Region was reported, representing 21.3 percent of 1977 total U.S. production.

- Nearly 72 percent of the reported tonnage or 105 million tons of coal was shipped by rail.

- More than 95 percent of the coal produced in the Appalachian Region and shipped by rail was captive.

- The average length of haul for rail shipments of coal in this region was 291 miles.

- The next best transportation alternative would cost coal shippers in the Appalachian Region 336.9 percent of the 1977 average rail cost.

D. A high degree of captivity was found for all types of rail movements

- Approximately 41 percent of coal shipments by rail was moved by unit trains in 1977. Of the total unit train movements, 89 percent was considered captive.

- Interstate movements accounted for nearly 75 percent of total rail tonnages, and more than 87 percent of the interstate tonnage was found captive.

- Intrastate movements, which represented 25 percent of the rail shipments, were 69 percent captive.

- About one-fourth of the coal moved by rail was carried in privately owned cars (owned by shippers or customers); more than 75 percent of that was reported captive.

Detailed data for the U.S. and all three regions covered by the survey are presented in the Appendix.

CONCLUSION

The survey revealed that the captive shipper problem existed in practically every coal producing region, market and movement. Coal producers depend heavily on the railroads to get their products to the utility, steel, and industrial consumers.

In many cases, rail transport is the only available method for transporting coal to its markets. In western states, for example, coal must be shipped in large quantities over long distances before reaching its final destination.

The survey shows that there is very little or no competition for the movement of coal. Transportation costs already constitute a major portion of the delivered price of coal. Higher rail rates due to rail deregulation would lead to even higher cost of coal to the utility, steel mill and industrial coal user and to our customers overseas. Higher rail rates would eventually be reflected in higher costs of electricity and other consumer products and would make U.S. coals even less competitive in the world market.

APPENDIX 1.

"CAPTIVE" COAL SHIPMENTS BY RAIL IN 1977

AREA	U. S. TOTAL
NO OF MINES	386
TOTAL 1977 PROD (1000)	290,995
% OF REPORTED TOTAL PROD	100.00
% OF 1977 U. S. PROD	42.09

		TONS (1000)	% CAPTIVE	AVG HAUL MILES
RAIL SHIPMENTS BY MARKET				
	UTILITY	137,312	83.30	
	STEEL	24,487	85.83	
	INDUSTRIAL	12,154	75.05	
	EXPORTS	19,321	93.19	
	TOTAL	193,277	84.60	247
RAIL SHIPMENTS BY TYPE				
	UNIT TRAIN	78,382	89.22	347
		CARS* (1000)	% CAPTIVE	
	PRIVATE CARS	519	75.53	
	RAIL CARS	2,192	87.61	
		% TONS	% CAPTIVE	
	INTERSTATE	74.60	87.37	308
	INTRASTATE	25.40	69.10	70
RAIL COST & ALTERNATIVES		% REPORTED**	$/TON	
	AVG COST (RAIL)	37.43	6.27	
	AVG COST (ALTIVE)	32.99	18.69	
	ALTERNATIVES			
	TOTAL REPORTED	40.71		
	TRUCK ONLY	37.56		
	TRUCK/BARGE	2.61		
	TRUCK/RAIL	0.54		

* Number of carloads

** Percent of total sample (in terms of tons) reporting "cost" and "alternative" dat

APPENDIX 2.

AREA	WESTERN U. S.
NO OF MINES	26
TOTAL 1977 PROD (1000)	49,857
% OF REPORTED TOTAL PROD	17.13
% OF 1977 U. S. PROD	7.21

		TONS (1000)	% CAPTIVE	AVG HAUL MILES
RAIL SHIPMENTS BY MARKET				
	UTILITY	28,682	98.06	
	STEEL	306	100.00	
	INDUSTRIAL	1,084	100.00	
	EXPORTS	0	0.00	
	TOTAL	30,071	98.15	311
RAIL SHIPMENTS BY TYPE				
	UNIT TRAIN	9,210	93.81	912
		CARS (1000)	% CAPTIVE	
	PRIVATE CARS	172	96.61	
	RAIL CARS	332	95.88	
		% TONS	% CAPTIVE	
	INTERSTATE	81.97	92.85	373
	INTRASTATE	18.03	95.60	36
RAIL COST & ALTERNATIVES		% REPORTED	$/TON	
	AVG COST (RAIL)	31.88	8.13	
	AVG COST (ALTIVE)	19.74	18.75	
	ALTERNATIVES			
	TOTAL REPORTED	33.55		
	TRUCK ONLY	33.55		
	TRUCK/BARGE	0.00		
	TRUCK/RAIL	0.00		

APPENDIX 3.

AREA	CENTRAL U. S.
NO OF MINES	77
TOTAL 1977 PROD (1000)	93,993
% OF REPORTED TOTAL PROD	32.30
% OF 1977 U. S. PROD	13.60

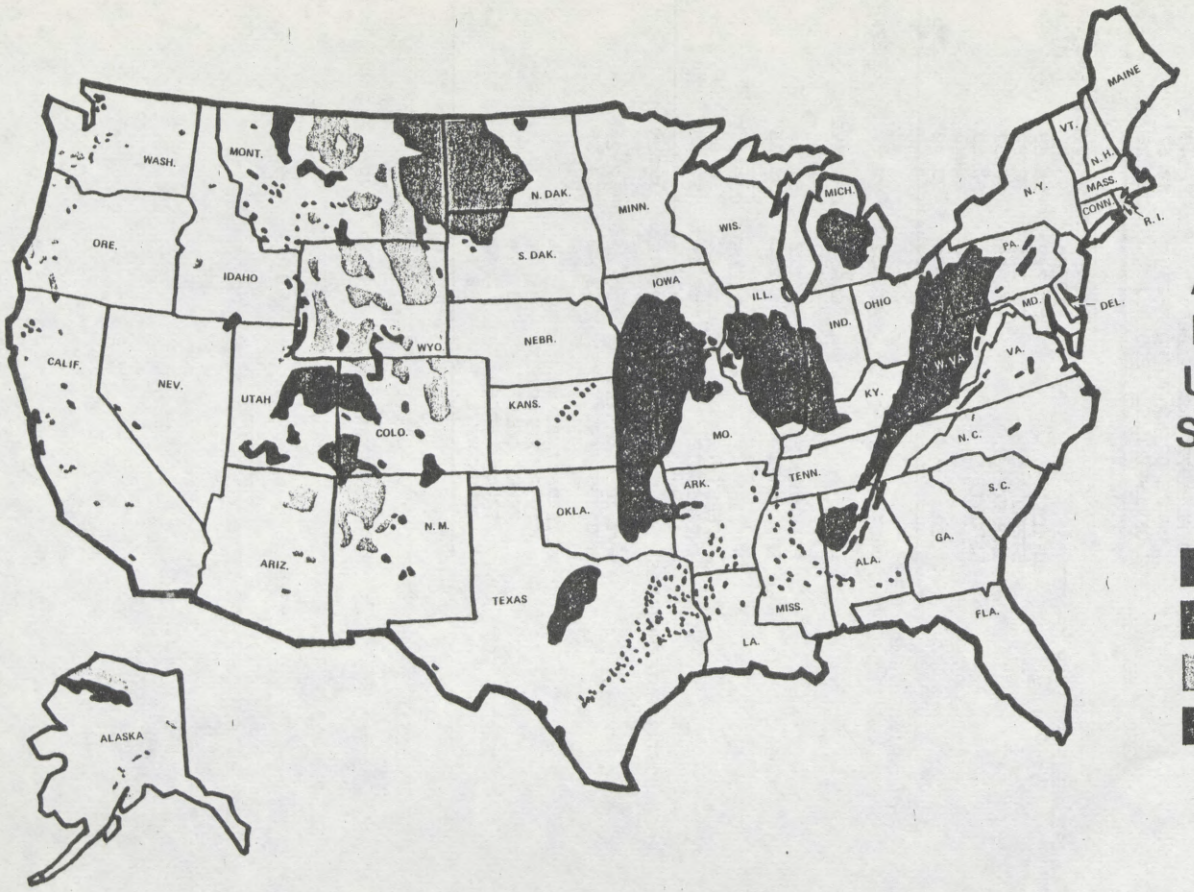
RAIL SHIPMENTS BY MARKET	TONS (1000)	% CAPTIVE	AVG HAUL MILES
UTILITY	52,888	59.62	
STEEL	930	3.87	
INDUSTRIAL	3,984	47.16	
EXPORTS	0	0.00	
TOTAL	57,805	57.86	134
RAIL SHIPMENTS BY TYPE			
UNIT TRAIN	22,821	89.22	217
	CARS (1000)	% CAPTIVE	
PRIVATE CARS	224	75.53	
RAIL CARS	575	87.61	
	% TONS	% CAPTIVE	
INTERSTATE	55.70	87.37	197
INTRASTATE	44.30	69.10	55

RAIL COST & ALTERNATIVES	% REPORTED	$/TON
AVG COST (RAIL)	39.12	3.76
AVG COST (AL'TIVE)	39.12	9.81
ALTERNATIVES		
TOTAL REPORTED	42.62	
TRUCK ONLY	39.33	
TRUCK/BARGE	3.29	
TRUCK/RAIL	0.00	

APPENDIX 4.

AREA	APPALACHIA
NO OF MINES	283
TOTAL 1977 PROD (1000)	147,145
% OF REPORTED TOTAL PROD	50.57
% OF 1977 U.S. PROD	21.28

		TONS (1000)	% CAPTIVE	AVG HAUL MILES
RAIL SHIPMENTS BY MARKET				
	UTILITY	55,742	98.09	
	STEEL	23,251	88.92	
	INDUSTRIAL	7,086	87.52	
	EXPORTS	19,321	93.19	
	TOTAL	105,401	95.40	291
RAIL SHIPMENTS BY TYPE				
	UNIT TRAIN	46,351	92.58	299
		CARS (1000)	% CAPTIVE	
	PRIVATE CARS	123	91.86	
	RAIL CARS	1,285	95.36	
		% TONS	% CAPTIVE	
	INTERSTATE	82.86	90.84	330
	INTRASTATE	17.14	97.35	101
RAIL COST & ALTERNATIVES		% REPORTED	$/TON	
	AVG COST (RAIL)	38.08	7.24	
	AVG COST (AL'TIVE)	33.40	24.39	
	ALTERNATIVES			
	TOTAL REPORTED	41.71		
	TRUCK ONLY	37.74		
	TRUCK/BARGE	2.98		
	TRUCK/RAIL	0.99		



COAL AREAS IN THE UNITED STATES

bituminous

lignite

sub-bituminous

anthracite

APPENDIX 5

JUNE 28, 1979

TESTIMONY OF RICHARD MILLER BEFORE THE TASK FORCE ON INFLATION OF THE HOUSE BUDGET COMMITTEE

IMPACT OF INFLATION ON THE COAL INDUSTRY

GOOD MORNING - MY NAME IS RICHARD MILLER AND I AM EXECUTIVE VICE PRESIDENT OF AMAX COAL COMPANY, A DIVISION OF AMAX INC. AS YOU MAY KNOW, AMAX COAL IS THE THIRD LARGEST PRODUCER OF COAL IN THE UNITED STATES. WE OPERATE MINES IN THE ILLINOIS BASIN AND IN THE POWDER RIVER BASIN OF WYOMING. I AM HERE TO SHARE WITH YOU SOME OF OUR THOUGHTS ON THE EFFECTS OF INFLATION ON COAL AND TO SUGGEST TO YOU THAT GREATER USE OF COAL CAN HELP TO REDUCE THE RATE OF INFLATION IN OUR ECONOMY.

FIRST, LET US LOOK AT WHAT WE BELIEVE TO BE THE PRINCIPAL CAUSES OF THE RAPID INFLATION OF COAL COSTS OVER THE LAST DECADE. THEY ARE TWO IN NUMBER: 1 - EXCESSIVE GOVERNMENT REGULATIONS; 2 - GENERAL INFLATION IN COSTS OF MATERIALS AND SUPPLIES FOR CONSTRUCTION AND OPERATION OF COAL MINES.

FIRST A LOOK AT "EXCESSIVE GOVERNMENT REGULATIONS". WE RECOGNIZE THAT A SOCIETY AS LARGE AND COMPLEX AS OURS REQUIRES SOME DEGREE OF REGULATION TO ASSURE RESPONSIBLE ACTIONS BY ALL SEGMENTS OF THE BUSINESS COMMUNITY. HOWEVER, DURING THE PAST DECADE A SERIES OF ACTS HAVE BEEN PASSED INTO LAW WHICH HAVE CREATED A MAZE OF OVERLAPPING, CONFLICTING AND CONFUSING REGULATIONS WHICH HAVE MADE IT VIRTUALLY IMPOSSIBLE FOR THE

COAL INDUSTRY TO RESPOND TO THE NATION'S GROWING ENERGY CRISIS, I.E. THE NATIONAL ENVIRONMENTAL POLICY ACT, THE FEDERAL WATER POLLUTION CONTROL ACT, THE CLEAN AIR ACT, THE FEDERAL MINERALS LEASING ACT, FEDERAL MINE HEALTH AND SAFETY ACT, THE NATIONAL RESOURCE RECOVERY ACT, THE SOLID WASTE DISPOSAL ACT AND THE FEDERAL SURFACE MINING CONTROL AND RECLAMATION ACT. THESE LAWS HAVE CREATED A FEDERAL BUREAUCRACY THAT CHURNS OUT REGULATIONS FASTER THAN ANYONE CAN READ THEM LET ALONE INTERPRET, IMPLEMENT OR ENFORCE THEM. NOT TO BE OUTDONE, MANY STATES HAVE JOINED THE FEDERAL GOVERNMENT IN ENACTING SUCH LAWS AND REGULATIONS. COMPETITION BETWEEN STATE AND FEDERAL AGENCIES AND BETWEEN THE VARIOUS STATE AND FEDERAL AGENCIES HAS ARISEN; HUNDREDS OF LAWSUITS HAVE BEEN FILED. A WHOLE NEW DIMENSION HAS BEEN ADDED TO CORPORATE RESPONSIBILITY. WE DO NOT BELIEVE EACH AND EVERY LAW OR REGULATION IS EXCESSIVE, BUT WE CERTAINLY BELIEVE MANY OF THEM ARE AND CERTAINLY WHEN VIEWED IN THEIR TOTALITY THEY ARE SURELY EXCESSIVE.

ONE OF THE PRIME EXAMPLES OF EXCESSIVE REGULATION OF THE COAL INDUSTRY INVOLVES THE REGULATIONS PROMULGATED UNDER THE SURFACE MINE REGULATION AND CONTROL ACT OF 1977. IN OUR VIEW, THE OFFICE OF SURFACE MINING WHICH WAS CREATED BY THE ACT HAS ADOPTED A POLICY OF ENACTING REGULATIONS WHICH GO FAR BEYOND WHAT IS NECESSARY AND REASONABLE TO ACCOMPLISH THE STATED PURPOSE OF THE ACT. IN ADDITION, THE DEPARTMENT OF INTERIOR IS FORCING THE STATES TO ACCEPT OSM'S REGULATIONS OR TO ADOPT

EVEN MORE STRINGENT REGULATIONS. TIME DOES NOT PERMIT ME TO PRESENT DETAILED EXAMPLES OF THE EXCESSIVE NATURE OF THE OSM REGULATIONS. INDUSTRY AND STATE OFFICIALS HAVE DEVOTED COUNTLESS MAN HOURS DIRECTED TOWARD CONVINCING OSM TO ADOPT A MORE REALISTIC POSTURE, BUT TO DATE OUR EFFORTS HAVE NOT PRODUCED SATISFACTORY RESULTS. THE FULL IMPACT OF THIS ACT ON COSTS OF COAL MINING HAS NOT YET OCCURRED AND ALTHOUGH WE CAN PROJECT FIGURES, WE DO NOT KNOW THE PRECISE TOTAL INCREASE IN COSTS WHICH IT WILL ADD.

INFLATIONARY COST INCREASES RESULTING FROM THIS ACT ARE NOW ESTIMATED TO RANGE FROM A LOW OF 50 CENTS TO A DOLLAR IN THE VERY HIGH PRODUCTIVE POWDER RIVER BASIN TO AS MUCH AS 12 to 15 DOLLARS PER TON IN THIN SEAM MINING AREAS IN APPALACHIA. WE DO KNOW THAT THE INCREASES HAVE ALREADY EXCEEDED THE ESTIMATES MADE BY DOI WHEN THEY ENCOURAGED CONGRESS TO PASS THE ACT. WE FEEL THIS IS PARTLY BECAUSE DOI UNDERESTIMATED THE COST OF THE ACT AND PARTLY BECAUSE OF OSM'S POLICY OF GOING BEYOND THE REQUIREMENTS OF THE ACT. IN OUR OWN CASE, AMAX HAS INVESTED OVER $45 MILLION OF CAPITAL TO PURCHASE NEW EQUIPMENT TO COMPLY WITH JUST THE INTERIM PERFORMANCE STANDARDS AT OUR MIDWESTERN OPERATIONS ALONE. WE ARE CURRENTLY SPENDING OVER $27 MILLION ANNUALLY TO OPERATE AND MAINTAIN THIS EQUIPMENT.

ONE DRAMATIC INDICATOR OF REGULATORY COSTS IS THE DECLINE IN PRODUCTIVITY WHICH HAS OCCURRED DURING THE PAST DECADE. ONLY A DECADE AGO, U.S. UNDERGROUND PRODUCTIVITY PEAKED AT 15.61 TONS PER MAN DAY: FOR 1978 PRODUCTIVITY HAD

SHRUNK TO 8.25 TONS PER MAN DAY. FOR SURFACE MINING WE ALSO SEE A DECLINE FROM A RATE OF 35.9 IN 1969 TO 25 TONS PER MAN DAY IN 1978. DURING THIS SAME PERIOD, AVERAGE WEEKLY EARNINGS OF COAL MINERS DOUBLED. THE COMBINED EFFECT IS AN INCREASE IN LABOR COSTS OF PRODUCING COAL BY A MULTIPLIER OF 3 to 4 TIMES.

THE SECOND IMPORTANT CAUSE OF INCREASES IN COSTS OF PRODUCING COAL HAS BEEN THAT COAL SUPPLIES AND EQUIPMENT HAVE BEEN CAUGHT UP IN THE VISCOUS CYCLE OF INFLATION JUST LIKE EVERYTHING ELSE. FOR EXAMPLE, LARGE DRAGLINES USED IN SURFACE MINING HAVE MORE THAN TRIPLED IN COST IN THE DECADE OF THE 70'S AS HAS MOST OTHER EQUIPMENT USED TO PRODUCE COAL.

A DECADE AGO, CONSTRUCTION OF A SURFACE COAL MINE IN THE ILLINOIS BASIN INCLUDING A PREPARATION PLANT COST 12 TO 15 DOLLARS PER ANNUAL TON OF PRODUCTION CAPACITY, I.E. A 2 MILLION TON PER YEAR COAL MINE COSTS 25 TO 30 MILLION DOLLARS. TODAY'S COST OF A SIMILAR MINE WILL BE BETWEEN 90 AND 110 MILLION DOLLARS, $45 TO $55 PER ANNUAL TON OF PRODUCTION CAPACITY.

CONSIDERING THESE FACTORS IT IS EASY TO UNDERSTAND HOW THE AVERAGE FOB MINE PRICE FOR COAL IN THE U.S. HAS INCREASED FROM $6.26 PER TON IN 1970 TO $22.40 PER TON IN 1978.

MOST PEOPLE HAVE NOT ANALYZED THE REASONS FOR THE INCREASES IN COST OF PRODUCING COAL AND MANY HAVE ERRONEOUSLY ASSUMED THAT THE INCREASES HAVE COME ABOUT PRIMARILY AS A RESPONSE TO THE QUINTUPLING OF THE PRICE OF IMPORTED PETROLEUM WHICH DURING THE SAME PERIOD INCREASED FROM $2.60 per barrel to over $14. COMPARATIVE INCREASE FACTORS - COAL 3.6 TIMES - OIL 5.41 TIMES.

DURING THAT PERIOD OUR USE OF IMPORTED CRUDE OIL INCREASED 4.7 TIMES FROM 484 MILLION TO OVER 2,848 MILLION BARRELS PER YEAR. WE HAVE EXAMINED OUR OWN PRICE PICTURE AND FOUND THAT FOR EXAMPLE, IN 1970 THE AVERAGE FOB MINE PRICE OF COAL FROM OUR ILLINOIS BASIN MINES, THE ONLY AREA IN WHICH WE OPERATED AT THE TIME, WAS $4.40 PER TON. BY 1978, THE FOB MINE PRICE FROM THE SAME GROUP OF MINES HAD INCREASED TO $18.38. THE MOST STARTLING INFORMATION ABOUT OUR NUMBERS IS THAT DURING THIS SAME PERIOD IN WHICH OUR COAL PRICE INCREASED OVER 400%, OUR NET PROFIT FROM THESE MINES INCREASED 3 CENTS PER TON. IN REAL TERMS THIS IS, OF COURSE, A SUBSTANTIAL DECREASE IN PROFITABILITY. IN PARTICULAR WHEN VIEWED AGAINST THE SUBSTANTIAL INVESTMENT NOW REQUIRED. IT WOULD BE STRETCHING THINGS JUST A BIT TO CHARACTERIZE THIS AS PRICE GOUGING.

WHAT HAVE BEEN THE RESULTS OF THE INFLATION IN COSTS OF PRODUCING COAL? ONE RESULT IS THAT COAL HAS FAILED TO INCREASE ITS PROPORTIONAL SHARE OF OUR BASIC ENERGY REQUIREMENTS. THAT FAILURE IN AND OF ITSELF, AS WE HAVE ALREADY SHOWN, HAS FUELED THE FIRES OF INFLATION BY INCREASING OUR DEPENDENCE ON FOREIGN OIL. COAL IS, AND FOR MANY YEARS HAS BEEN, THE FUEL OF LAST CHOICE. AS LONG AS NUCLEAR, NATURAL GAS OR OIL IS AVAILABLE AT COSTS ANYWHERE NEAR THAT OF COAL, THEY ARE GENERALLY FIRST CHOICES OF USERS.

IN 1970, COAL SUPPLIED ALMOST 19 PERCENT OF OUR TOTAL ENERGY REQUIREMENT. FOR 1978, THE NUMBER IS 18.1 PERCENT. YET DURING THIS NINE YEAR SPAN WE HAVE HAD THREE PRESIDENTS OFFERING ENERGY

PLANS CALLING FOR AN INCREASED DEPENDENCE UPON COAL. THE LATEST TERM FOR THIS PHENOMENON IS DOUBLE SPEAK. ONE OF THE RESULTS OF THIS PHENOMENON IS AN INCREASE IN PUBLIC MISTRUST OF GOVERNMENT AND INDUSTRY ALIKE. A VIVID ILLUSTRATION OF THIS MISTRUST OCCURS WHEN THE COAL INDUSTRY ATTEMPTS TO PASS THE COST OF THESE EXPENSIVE LAWS AND REGULATIONS ALONG TO THE UTILITIES AND THE UTILITIES TRY TO PASS THEM ALONG TO THE PUBLIC IN THE FORM OF RATE INCREASES OR FUEL ADJUSTMENTS. THE PUBLIC DOES NOT REALIZE WHAT IS HAPPENING. THEY CANNOT UNDERSTAND WHY THE COSTS OF MINING AND USING COAL ARE RISING SO RAPIDLY, AND THEY OBVIOUSLY WANT TO PUT A STOP TO IT. WE VERY WELL WANT TO PUT A STOP TO IT ALSO BUT QUITE OBVIOUSLY WE CANNOT GET A HANDLE ON OUR REGULATORY COSTS WITHOUT YOUR HELP. MORE SPECIFICALLY, YOUR CONSTITUENTS AND OUR CUSTOMERS AND NEIGHBORS DO NOT REALIZE THAT COAL CONTINUES TO BE THE CHEAPEST FORM OF ENERGY ... BUT AGAIN, WE NEED YOUR HELP TO HAVE IT REMAIN SO.

THERE ARE TWO VERY IMPORTANT FACTS ABOUT COAL WHICH WE MUST NOT OVERLOOK:

1. COAL IS CHEAPER THAN OIL AND ITS COST IS RISING AT A LOWER RATE THAN OIL: AND,
2. WE HAVE ABUNDANT RESERVES OF COAL IN THE CONTINENTAL UNITED STATES AND EVERY DOLLAR WE SPEND FOR THAT COAL CIRCULATES IN OUR OWN ECONOMY GENERATING OTHER DOLLARS IN GOODS AND SERVICES.

HOW CAN INCREASED USE OF COAL HELP FIGHT INFLATION?

. BY REDUCING OUR GROWING DEPENDENCE ON EVER INCREASINGLY COSTLY FOREIGN OIL.

. A RESULT OF INCREASED COAL USE WILL BE A DRAMATIC

IMPROVEMENT IN OUR NATIONAL BALANCE OF PAYMENTS AND THUS A STRONGER DOLLAR WITH WHICH TO COMPETE IN INTERNATIONAL TRADE CIRCLES.

HOW CAN YOU AS CONGRESSMEN HELP THIS PROCESS?

. BY URGING THAT A CLEAR NATIONAL ENERGY POLICY BE ADOPTED WHICH RECOGNIZES THAT COAL IS OUR MOST ABUNDANT ENERGY SOURCE AND MUST BE RELIED UPON OVER THE REMAINDER OF THIS CENTURY.

. BY URGING THAT THE CONTRADICTORY AND COSTLY REGULATORY OBSTACLES TO GREATER COAL USE BE REVIEWED AND ROLLED BACK WHERE APPROPRIATE.

Senator BENTSEN. Mr. Lorentzsen, you speak of a 1.6 percent after-tax return. The railroad industry has asked those of us on the Senate Finance Committee to support your accounting method, and I have supported it. In a period where you are rapidly upgrading facilities, wouldn't betterment accounting, where you can charge off that cost before taxes, wouldn't that affect your after-tax return by conventional accounting? Wouldn't it differentiate somewhat if you were on conventional tax accounting?

Mr. LORENTZSEN. Over a long period of time the betterment accounting is considered to be the equivalent of standard accounting.

Senator BENTSEN. I understand that. But I'm talking about when you are going for a substantial upgrading of equipment in a short period of time. Isn't it going to show a substantial reduction in your after-tax returns at that time? Not when you catch up, 50, 10, or 15 years from now—but right then?

Mr. LORENTZSEN. At the time when we are doing the large volume of work we are currently doing, your statement is correct. However, even if that were the case, we would simply be paying more taxes to the Federal Government than we do because our earnings would be somewhat inflated.

But we would also have a different guideline for depreciation. Over a period of time, the difference would not be very great.

Senator BENTSEN. Mr. Lorentzsen, I understand that very well. You know, I am one of the original sponsors of S. 1053 and all of that, because I want to see a modernization of productive capacity in this country, with attention to the supply side.

But when you are trying to compare after-tax figures throughout the industry, and you have a different accounting method, I'm interested to know what your return would be if you had conventional accounting today. Do you know?

Mr. LORENTZSEN. I do not have that calculation handy. But if over the long term we had been like any other industry there would be little or no effect.

Senator BENTSEN. Mr. Lorentzsen, I was ready to stipulate to that point from the beginning. But I'm trying to use your figure today which you are using to compare it with the rest of industry that doesn't use the same kind of accounting practices. You are using that to say, look, we only get 1.6, and we are entitled to a decent return on our equity.

But you are also in a period of major modernization of your capacity. Now I'm delighted that you are, but that has a much greater impact on your net after-tax return this year than it would under conventional accounting practices. That is why I'm trying to compare apples to apples.

Mr. LORENTZSEN. Like I said, Mr. Chairman, I cannot give you a precise percentage. But if in fact that were the case, and using the best information that I have and off the top of my head, it would probably be for the railroad for last year somewhere in the range of 4 to 6 percent, far less than any one of the utilities earned in the year 1978.

Senator BENTSEN. That is what I wanted to know. That still is very low. And I understand that. But instead of 1.6 under conventional accounting as compared to other corporate returns, your estimate is it might be more in the range of 4 to 6 percent, still too low.

Mr. LORENTZSEN. Still inadequate.

Senator BENTSEN. Too low on what it costs you for equity today, what it costs to borrow. Now, when we get to the problem of the products that you haul, the charge has been made that there is a substantial cross-subsidization between the two. Is that correct or not? That coal in effect is really carrying the burden for other types of traffic.

Mr. LORENTZSEN. I do not think that statement is correct. The fact is that prior to our raising these coal rates to a level that we are currently achieving, for example, the hauling of grain was subsidizing the hauling of coal, and I would be the first one to tell you that I was a party to and decided to make a change so that coal would stand on its own feet.

I do not think it fair for other commodities to subsidize the movement of coal, particularly when we are in the process of improving capacity of our rail system to move this coal. I think that coal must stand on its own feet, much as grain has done.

Senator BENTSEN. Now, you are talking about the Arthur D. Little study, and saying that in effect, coal was still the best buy for the Southwest, for the utilities and for major industry. Yet, Celanese, for example, was going to convert four plants from gas to coal but now after one conversion it has decided not to convert the other three because of high shipping costs.

Then we get the testimony that people can buy coal and deliver it through a rather tortuous course involving a couple of extra handlings, 300 miles by the railroad, then another 88 miles by railroad, then thousands of miles by ship.

And if San Antonio is buying coal for $7.50, I would assume that the coal they buy from South Africa would perhaps be of the order of $5 a ton. So there is an awful lot of leeway there.

Mr. LORENTZSEN. I have two or three comments to what your question or statement is. One: The Department of Energy data report as of May 1979, quoting the costs of coal versus oil and gas per million Btu's as of January 1979, for San Antonio, Tex., City Public Service, gas is $2.20 per million Btu's; oil $1.98 and coal $1.50, which includes the present rates we are talking about.

Secondly, with respect to coal from Poland and Australia, I am aware that in Japan there has been coal moving from Australia to Japan and the economics of moving that coal is changing. I would have to raise the question since I do not know the data, cost data, et cetera, behind the statement made, if in fact this is reality, bargaining, or in fact a gimmick being used in Texas.

If, in time, it does prove that it's economically feasible to move that coal over a long period of time, I would have to question that possibility.

Senator BENTSEN. I would assume, Mr. Lorentzsen, that those businessmen are as pragmatic as you are, and have staffs of reasonable competence. And they have come up with those kinds of economic decisions. It would appear to be that the combination of price and rail rates has made coal marginal insofar as decisionmaking about what kind of energy they are going to use and where they are going to buy it.

Now, Mr. Miller, did I understand you said that you felt the market for coal was not nearly as strong as you had anticipated or expected it to be; is that correct?

Mr. MILLER. That's correct.

Senator BENTSEN. Yet, on the other side, Mr. Lorentzsen, you talked about the magnitude of the demand for coal, using that term in a way which I interpreted to mean a very substantial increase in the utilization of coal. Is that your contrary feeling?

Mr. LORENTZSEN. No. I do not think the two comments are contrary. The coal we are moving is based on utilities that converted to coal some time ago. I certainly agree 100 percent with what Mr. Miller has said—that there has been a great slowdown in the movement of coal to new utilities, and in the planning of utilities to convert. In fact, Federal regulations are the big deterrent.

Senator BENTSEN. Senator McGovern.

Senator MCGOVERN. Thank you, Mr. Chairman, Mr. Miller, Mr. Lorentzsen.

The 4–R Act allowed the rail industry, of course, greater ratemaking freedom. After that act was implemented, several of the carriers actively raised their rates as has been pointed out, particularly for coal. I understand the rationale for those increases were that the rules governing rail rates prior to the 4–R Act actually kept coal rates artifically low.

Is that your assessment of the situation?

Mr. LORENTZSEN. Yes, that is. In fact, as I mentioned in my oral statement, and it's included in the prepared statement, the 4–R Act requires that the prices established be self-supporting and cover all of the expenses, including the cost of capital. We have been seeking to reach that objective.

Senator MCGOVERN. Under the provisions of the new act, are you satisfied that the Burlington Northern is now able to fully recover its costs in the transportation of coal?

Mr. LORENTZSEN. There is some difference between what the Commission has permitted in establishing rates as testified to here by Mr. O'Neal, versus what our cost of capital is. The Commission uses a cost of capital figure of 10.6 percent, and our own cost of capital as determined by past experience is 12.5 percent.

So, there is a difference in percentage points of about 1.9 percent. But I would say the Commission has been helpful in getting rates to a reasonable level, not as much as we have sought to cover all of our cost of capital, but they have been very, very helpful. Less than what we had hoped for.

Senator MCGOVERN. We are going to have to consider deregulation proposals in the Congress. Would complete deregulation of the rail industry result in further rate increases beyond increases to cover inflation?

Mr. LORENTZSEN. You are speaking, referring, Senator, to coal, primarily?

Senator MCGOVERN. Primarily, yes.

Mr. LORENTZSEN. I am the man that started adjusting these coal rates in Burlington Northern. I am not ashamed of that. In fact, I'm pleased that I did, so our company is not in a position, such as the Milwaukee.

I'm also the fellow in our company who says we're not going to have exorbitant coal rates. And I make a point of seeing to it the rates we establish do not reach that level. If in fact we have total rate freedom,

we would seek a level approximately where the Commission has permitted us to go now. We would like to recover the difference between our cost of capital and the cost of capital as Mr. O'Neal has stated. But we would not raise these rates to an exorbitant level.

Senator McGovern. A few minutes ago, Mr. Lorentzsen, I don't know whether you were in the room or not, I related the disparity of coal rates between the Burlington and the Milwaukee Road. As you know the Milwaukee is now in bankruptcy, whereas your line is experiencing improved financial health and providing relatively reliable service.

Do you agree with Chairman O'Neal's observations on the Milwaukee rate structure and how that relates to their present financial condition? I have worked very closely with that railroad during all of these bankruptcy proceedings and done everything I could as one Senator to try to save as much of that line as we can. But I'm wondering, maybe you are reluctant to comment on the operations of another line, how you see the relationship of their rate structure to their current financial condition?

Mr. Lorentzsen. The comments made by Chairman O'Neal are general, and I'm in general concurrence with them. On this particular move that you referred to, Senator, I believe the mills-per-ton-mile rate is about 7.15 or approximately in that range. We simply could not move that coal and cover our costs at that level.

Our experience is that we have got to be something in the range of about 11 mills per ton-mile. In this particular case, since I have some knowledge of that coal move, the Milwaukee is losing money. That is one of the reasons, coupled with the other facts as outlined by Chairman O'Neal, that the Milwaukee is in financial difficulties.

Senator McGovern. I have one final question. While you didn't deliver this part of your oral statement, in your prepared statement you speak to a suggestion that is sometimes made that the railroads would function more efficiently if they had tougher competition from coal slurry pipelines.

You make the statement in your prepared statement, and I quote:

> It should also be pointed out that a coal slurry pipeline, contrary to popular belief, would not be a competitive force but would actually be an anti-competitive force.

What does that mean?

Mr. Lorentzsen. Well, coal slurry pipelines would propose to have a contract which would lock in the movement of coal from a fixed location to a fixed destination. As such, they are not subject to the common carrier requirements that a railroad is. It would in fact take away from us traffic that we have been serving and handling and spent the money on, made the capital investments in. Take that away from us and, of course, we would be left with the obligation to pay for the cost of these capital investments.

Coal slurry would in fact have a very, very serious impact on what our rates would have to be to carry the burden that we have had in investing in these properties.

Senator McGovern. I am very skeptical of moving large amounts of coal by water in any event. That is another issue. But I think with water as precious as it is in the West, we have to think very carefully before we commit substantial amounts of clean water for the movement of coal.

In any event, I was impressed by the testimony of all the witnesses today, Mr. Chairman. I want to thank you for scheduling these hearings. I think they are well planned and we have had excellent witnesses today.

Senator BENTSEN. Thank you very much, Senator.

I really do think that the witnesses did a good job in helping solve the problem that is facing us and trying to keep the railroads solvent in this country and, at the same time, achieving the energy objectives of the country.

Thank you very much. The committee stands adjourned.

[Whereupon, at 12:15 p.m., the committee adjourned, subject to the call of the Chair.]

[The following questions and answers were subsequently supplied for the record:]

RESPONSE OF NORMAN N. LORENTZSEN TO WRITTEN QUESTIONS POSED BY SENATOR MCCLURE

CONGRESS OF THE UNITED STATES,
JOINT ECONOMIC COMMITTEE,
Washington, D.C., July 24, 1979.

Mr. NORMAN N. LORENTZSEN,
President and Chief Executive Officer,
Burlington Northern, Inc.,
St. Paul, Minn.

DEAR MR. LORENTZSEN: Senator James A. McClure has requested that the enclosed questions be sent to you. They, along with your answers, will be included in the record of the hearing on the Impact of Rail Coal Shipping Rate Increases which was held July 24.

We would appreciate your reply as soon as possible in order to insert the answers in the final transcript.

Thank you for your attention to this matter.

Sincerely,

JACK M. ALBERTINE,
Executive Director.

Enclosure.

1. In 1974 the Burlington Northern and North Western railroads filed a joint application with the Interstate Commerce Commission to construct a north-south line in the Powder River Basin, Wyoming and that application was approved by the Commissios in January, 1976. At the time that application was filed the Burlington Northern recognized the North Western's right to participate in Powder River Basin coal originations. In a recent filing before the Federal Railroad Administration the Burlington Northern is now arguing that the North Western is sot entitled to participate in Powder River Basin coal. In light of the Commission's approval of the joint line project and the prior joint application, how do you justify the Burlington Northern's current position?

2. In an agreement between Burlington Northern and the North Western concerning the proposed joint operation of the Powder River Basin line, the Burlington Northern foreclosed the North Western from originating any coal produced north of Township 46 North even if a loading site is south of that location. This provision has now been challenged in a $100 million treble damage antitrust law suit. Apparently as a consequence, the North Western has filed an application with the Interstate Commerce Commission seeking approval of the agreement. Does Burlington Northern intend to file a similar application and allow interested shippers to comment on the effect of this exclusionary clause?

3. In the same joint line agreement there is a provision which allows Burlington Northern to buy out the North Western interest in the event the North Western is acquired by another transcontinental railroad. On its face this provision appears to be anticompetitive. What is the Burlington Northern's rationale for this provision of the contract?

BURLINGTON NORTHERN, INC.,
St. Paul, Minn., August 7, 1979.

MR. JACK M. ALBERTINE,
Executive Director, Joint Economic Committee, Congress of the United States, Washington, D.C.

DEAR MR. ALBERTINE: Your letter of July 24 encloses three separate questions which Senator McClure has asked that I answer. It is my understanding that this response is to be included in the record of the hearings on the Impact of Rail Coal Shipping Rate increases which was held on July 24. In this response I have repeated the questions for convenience and my answers follow each question. However, I have supplemented the answers by enclosures.[1] One item is especially voluminous, perhaps so much as to make printing inappropriate; namely, attachments 1–34 to "Comments of Burlington Northern Inc," in RFA Docket 511–78–1 Nevertheless, I hope the comment itself can be printed since it provides a detailed treatment of the issue raised by the Senator's first question. It seems to me that in the public interest it deserves the widest possible dissemination.

Question 1. "In 1974 the Burlington Northern and North Western railroads filed a joint application with the Interstate Commerce Commission to construct a north-south line in the Powder River Basin, Wyoming and that application was approved by the Commission in January, 1976. At the time that application was filed the Burlington Northern recognized the North Western's right to participate in Powder River Basin coal originations. In a recent filing before the Federal Railroad Administration the Burlington Northern is now arguing that the North Western is not entitled to participate in Powder River Basin coal. In light of the Commission's approval of the joint line project and the prior joint application, how do you justify the Burlington Northern's current position?"

Answer. Burlington Northern opposes the grant of the federal loan guarantee for the project proposed by Chicago and North Western because, as amended, it would fund the construction of an entirely new route to a connection with Union Pacific. This operation would be entirely different from that contemplated by the parties to the original joint application. Thus, Chicago and North Western has completely departed from the agreed approach, and is now acting as alter ego of the Union Pacific. The latter company already dominates coal transportation from southern Wyoming mines and, through other subsidiaries of its holding company parent, has a major direct interest in the actual production of coal. This new thrust raises a series of questions as to the potential for anti-competitive combinations of both coal production and coal transportation by or through Union Pacific Corporation. We most certainly oppose the use of federal credit for the principal benefit of the most successful railroad in the country. The issues are explained in considerable detail in the attached copy of our comment to FRA responsive to its request to the public. It must be read in light of the lengthy appendices, also enclosed.

These points aside, the Committee should also be advised that North Western has failed to provide its one-half share of the costs of construction of the joint line project either on an interim or long-term basis. Through the month of June, 1979, we have rendered thirty bills to the North Western totaling approximately $26 million which have not been paid. That company has thus failed to meet its commitments, leaving Burlington Northern to finance the entire cost of construction to date from the funds raised in the private sector.

Question 2. "In an agreement between Burlington Northern and the North Western concerning the proposed joint operation of the Powder River Basin line, the Burlington Northern foreclosed the North Western from originating any coal produced north of Township 46 North even if a loading site is south of that location. This provision has now been challenged in a $100 million treble damage antitrust law suit. Apparently as a consequence, the North Western has filed an application with the Interstate Commerce Commission seeking approval of the agreement. Does Burlington Northern intend to file a similar application and allow interested shippers to comment on the effect of this exclusionary clause?"

Answer. Burlington Northern has petitioned for leave to intervene in the proceeding initiated by the Chicago and North Western. Copy of the petition is enclosed. Such public commentary as anyone wishes to make will doubtless be received by the Commission so far as the rules of evidence permit. I wish to point out, however, that the agreement to which the question refers simply

[1] The enclosures may be found in the committee's files.

adopted as the northerly point of termination of the CNW's operations on the joint line the same point that that company had selected as the end of track in its original independent application to the ICC for authority to construct a separate line. I understand that North Western wished to avoid the expense of bridge construction necessary to any more northerly extension of its route.

Question 3. "In the same joint line agreement there is a provision which allows Burlington Northern to buy out the North Western interest in the event the North Western is acquired by another transcontinental railroad. On its face this provision appears to be anticompetitive. What is the Burlington Northern's rationale for this provision of the contract?"

Answer. We don't regard that provision of the contract as anticompetitive. On the contrary, the language of the contract is wholly consistent with those provisions of the Interstate Commerce Act which are designed to avoid overbuilding of railroads, to minimize duplicate service and to avoid the excess capacity which is responsible for the dire straits in which much of the industry now finds itself. It is consistent also with the views expressed by the ICC and the courts in various decisions as well as several policy pronouncements.

Since the conclusion of the hearing, there has been brought to my attention some material of major significance to the basic inquiry of the Joint Economic Committee on the effect of rail rate increases on the coal conversion program. It will be recalled that the City of San Antonio was particularly vocal in its complaints respecting rail rates. Thus, I am sure that the entire Committee and Senator Bentsen in particular will be interested in the attached quarterly report of the municipally owned utility for the quarter ending April 30, 1979.[2] Note especially the second paragraph which reads as follows:

"Financial results, detailed in this report, have reflected the growth of this metropolis, and rates have been about average in comparison with utilities across the nation and somewhat lower than those of most major cities in Texas."

Very truly yours,

NORMAN N. LOBENTZSEN,
President and Chief Executive Officer.

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[2] The attached quarterly report may be found in the committee's files.

APPENDIX

STATEMENT OF WILLIAM M. MERRILL, VICE PRESIDENT AND CONTROLLER, IOWA POWER & LIGHT CO., DES MOINES, IOWA

I am William M. Merrill, Vice President and Controller of Iowa Power and Light Company (Iowa Power), whose corporate headquarters are in Des Moines, Iowa. My responsibilities with the Company have included negotiating coal shipment contracts with the Burlington Northern Railroad, and supervising personnel involved with the day to day activities of coal shipments. We appreciate the opportunity to present testimony in this matter to the Committee.

The purpose of our testimony is to acquaint the Committee with our experience to date regarding the transportation of western coal to our new electric generating unit located at Council Bluffs, Iowa. This 650 megawatt unit, Council Bluffs Power Station Unit No. 3, was designed and constructed to utilize low sulphur western coal as its fuel source. It is jointly owned by Iowa Power, Iowa-Illinois Gas & Electric Company, Central Iowa Power Cooperative, Corn Belt Power Cooperative, Inc., Eastern Iowa Light and Power Cooperative, Cedar Falls Municipal Electric Utility and Atlantic Board of Waterworks and Electric Light and Power Plant Trustees. Under an agreement between the joint owners, Iowa Power has full responsibility for the construction and operation of the unit, including arrangements for the purchase and transportation of its fuel supply. Our testimony is submitted on behalf of all of the owners of the unit.

As an aid to understanding, we would like to give a brief recount of the factual situation giving rise to our current coal transportation problems. In July 1973, Iowa Power and the Burlington Northern entered into an agreement for a freight rate to be filed with the Interstate Commerce Commission for the transportation of coal from the Belle Ayr mine of the AMAX Coal Company at Belle Ayr, Wyoming to Council Bluffs. The rate at that time was $3.21 per ton in cars owned by Iowa Power subject to annual escalation. This agreement was further reduced to writing in a proposed Letter of Understanding as well as a proposed tariff, in September of 1974. This Letter of Understanding, in its revised and final form was transmitted by the Burlington Northern in January, 1976 and accepted by Iowa Power in February, 1976. In accordance with the escalation portion of the agreement, the rate as of January, 1976 had increased to $3.61 in shipper-owned cars.

Earlier in 1973, conditioned upon an acceptable rate for transportation, Iowa Power had entered into a contract with AMAX Coal Company for delivery of 40 million tons of low sulphur Wyoming coal to Council Bluffs during the period 1978 through 1997. This coal is and will be shipped from AMAX mines located on the Burlington Northern lines near Gillette, Wyoming.

Relying upon the contract with the Burlington Northern, Iowa Power made investments totaling many millions of dollars in rail-related facilities. These included coal cars, unloading facilities and side-tracks. Iowa Power has purchased 380 coal cars, 242 cars presently in service and 138 on order for a January 1980 delivery, for a total cost of just under $13 million pursuant to specifications provided and approved by the Burlington Northern. Iowa Power has rebuilt the spur track at Council Bluffs in accordance with Burlington Northern's specifications at a cost of $1,300,000. In further reliance upon the agreement with the Burlington Northern, Iowa Power constructed Unit No. 3 at the Council Bluffs station at a cost of approximately $275 million. This unit went into operation in December, 1978.

On February 1, 1978, the Burlington Northern did publish the agreed rate, as escalated, of $5.23 per ton for the transportation of coal in unit trains from Belle Ayr, Wyoming to Council Bluffs, Iowa. In accordance with the agreement between the Burlington Northern and Iowa Power, the rate was escalated to $5.62 per ton in September of 1978 and again on July 1, 1979, to $6.00 per ton.

Although the contract between the parties stated that the unit train tariff would be escalated solely in accordance with the Burlington Northern standard escalation formula, the Burlington Northern, contrary to the agreement, filed a tariff stating its intention to raise the rate effective September 7, 1978 to $7.38 per ton. This increase was suspended by the Interstate Commerce Commission for seven months and further suspended an additional three months through July 6, 1979. The ICC has now decided that case and has found the maximum reasonable rate to be $7.25 per ton. The ICC also stated in its decision that the issue of whether an enforceable contract exists is a matter to be determined by a court. Also, contrary to the agreement, the Burlington Northern has filed other tariffs stating its intention to further increase the $7.38 per ton to $8.14 per ton effective July 7, 1979. The ICC decision has been appealed to the courts by both Iowa Power and the Burlington Northern.

Iowa Power has taken the initial step of obtaining a temporary court injunction preventing the Burlington Northern from filing any tariff which will depart from the agreed rate of $6.00 per ton. This matter is also currently pending in the courts. However, if one views the increases reflected in the Burlington Northern's tariff filings, contrary to its agreement with Iowa Power, the $8.14 rate represents an increase of $2.14 over and above the agreed rate of $6.00 per ton. On an average 103.7 car trainload, averaging 101.5 tons per car or 10,533 tons per train, this $2.14 per ton increase would result in an increase to Iowa Power's cost of service of $22,541 per trainload for the first six months of 1979. This $2.14 per ton increase would increase the cost of freight by $2,208,940 for the coal shipped in the first six months of 1979 or $4,417,880 on an annual basis to the joint owners. Since we are a captive customer of the Burlington Northern with no transportation alternative, the above annual increases would be reflected in each year of our 20 year coal contract. It has been estimated that this $2.14 per ton increase alone would add at least $5.00 per year to the utility bill of the average customer of the affected utilities.

The only alternative that Iowa Power and most other midwest utilities have to coal for base load generation is nuclear power, and we all realize that this source currently faces an uncertain future. The only exisitng facilities that we own which are not coal-fired are gas or oil fired turbines used primarily for peak load generation. These turbines provide only about two percent of our annual kilowatt hour requirements. We are truly a captive customer of the Burlington Northern, as coal is the only viable fuel for most existing generating stations and all future generating stations now under construction.

Performance of the railroad is another obstacle in the reliance upon coal for increased energy production. The basic problem here is turn-around time. When we first agreed to terms with the Burlington Northern, they stated that turn around time for a unit train from the mine at Gillette, Wyoming to the plant in Council Bluffs, Iowa and back would be 73 hours. (See Attachment A.) That was subsequently increased to 84 hours, and then to 111 hours. Recent experience shows that the actual turn around time is in excess of 140 hours.

We initially purchased two 100 car unit trains to provide for the shipment of 2.5 million tons of coal per year to the Council Bluffs plant. Due to the unreasonable turn-around times, we have since purchased a third unit train, which is yet to be delivered, and have leased two more. We are currently operating four trains rather than two. The Burlington Northern must have four sets of locomotives for our trains, placing an additional burden on their resources, and there is more congestion on the tracks. If the Burlington Northern could speed up the trains, they would increase their revenues (or decrease expenses), we would get the desired quantity of coal and everybody would be happier.

If we are going to meet the nation's energy goals, the coal is going to have to be shipped on time as well as at a reasonable rate. The current situation raises costs substantially for Iowa Power, the electric consumer, and the railroad.

We at Iowa Power strongly support a viable, sustaining rail system. We do not oppose cross-subsidization of rail rates in general, but we do oppose coal being singled out to subsidize unprofitable commodities. Those markets and commodities that don't pay their own way on the railroads should be identified. Many branch lines are uneconomical. The coal shipper should not be expected to unequitably subsidize these uneconomic commodities or lines.

Thank you.

Attachment.

ATTACHMENT A

BURLINGTON NORTHERN, INC.,
MARKETING DEPARTMENT, MARKET DEVELOPMENT DIVISION,
ENERGY, METALLICS AND CHEMICALS,
St. Paul, Minn., July 10, 1973.

Mr. REX E. JORGENSEN,
Manager of Purchasing,
Iowa Power & Light Co.,
Des Moines, Iowa.

DEAR REX: This will confirm our rate tender of 381¢ per net ton in Burlington Northern cars and 321¢ in IP&L cars, delivered to you at our recent meeting for moving unit train coal from the Gillette, Wyoming area to your proposed new electric generating facilities to be located at Council Bluffs, Iowa in the same area as your present generating units which are served by Burlington Northern.

These rates would be subject to escalation under the escalation formula furnished you with our letter of June 27 with the first application of escalation to occur with July 1, 1974.

The rates will apply for unit trains of approximately 110 cars of 100 tons capacity with each train set capable of delivering about 1,250,000 tons per year. Burlington Northern furnished cars would be either steel gons or hoppers with rotory couplers. The round trip schedule would be approximately 73 hours. This would include a maximum of 4 hours for loading and 4 hours for unloading.

Routing would be via BN direct. Rates do not include any expense to BN for construction of additional trackage at destination.

We are working on the additional rates requested to Des Moines and Council Bluffs and will furnish them as quickly as possible.

Yours truly,

R. S. SANDGREN,
Director of Pricing.

POSITION PAPER OF THE IOWA POWER CO., COUNCIL BLUFFS, IOWA, ON RAILROAD DEREGULATION

We recognize the necessity of preserving a financially healthy rail system in this country and the need for railroads to earn reasonable profits on all of their traffic, including coal. In those situations where true competitive circumstances exist, we support the recent administration bill to deregulate the railroads. However, we strongly object to such legislation to the extent that it would permit the railroads to continue their recent efforts of looking to captive coal traffic as the sole source of their hoped-for additional profits.

As a result of planning decisions made over the previous 10 years, Iowa Power and our customers are heavily committed to western coal as an energy source. We are captive shippers of the railroads in the truest sense of the word. Other than by rail, there is no present alternative available to transport our coal. In addition, we have invested millions of dollars in rail-related facilities, such as coal cars and unloading facilities. Since we must obtain our coal supplies through long term contracts with mine operators, we are restricted for all practical purposes to dealing with a single railroad.

Because of the low cost of handling coal, it has historically been profitable traffic for the railroads. The growth of the western coal market presents a tremendous opportunity for the western rail carriers to obtain significant financial benefits from this traffic. However, from our own recent experiences as well as those of other similar captive shippers, we can see no indication whatsoever that the railroads will be content to charge reasonable, cost-based rates. In case after case the railroads appear to be bent on exploiting their monopoly power by opting to reap huge short-run windfall profits on coal traffic.

Instead of attempting to halt such a trend, the administration bill would eliminate what little protection shippers now have against railroad exploitation. Transportation costs are already a major part of our fuel costs. We are very concerned about the effect of further increased costs on our electric utility customers. Eventually, exorbitant rail rates on coal would force the development of transportation alternatives, such as coal slurry pipelines, mine-head generation and coal gasification. We feel that these alternatives should be provided for in

any rail deregulation legislation. It is especially important that slurry pipelines be given strong support in order to provide a viable alternative to rail transportation for captive customers. Since these alternatives are not currently available, however, protection must be given to captive customers.

In summary, Iowa Power fully supports a strong and healthy rail system. To the extent competitive forces exist, we feel deregulation should be carefully examined. However, any deregulation bill must include and contain full protection for captive coal shippers against the exploitive practices of the railroads.

STATEMENT OF JOHN C. DAVIS, EXECUTIVE VICE PRESIDENT, THE ATCHISON, TOPEKA & SANTA FE RAILWAY CO., CHICAGO, ILL.

Chairman Bentsen, Members of the Committee, I am John C. Davis, Executive Vice President of The Atchison, Topeka and Santa Fe Railway Company (Santa Fe).

I am pleased that Santa Fe has this opportunity to present its views to this Committee on a subject which is so important from the standpoint of the public interest and the long-run viability of the railroads. As you know, Santa Fe is one of the major transcontinental railroads providing rail transportation within the Southwestern United States, and we serve many communities within the State of Texas. We participate with other railroads in hauling coal to destinations within Texas, including movements to the Houston Lighting & Power stations at Smithers Lake, to a Celanese cogeneration facility at Kings Mill, and to South Western Public Service Co.'s plant at Amarillo.

The ability of Western railroads—and of Santa Fe in particular—to haul the vast new amounts of coal presently projected for the next decade will be seriously jeopardized unless railroad earnings are improved.

It is clear to me—and I think to most observers—that the current earnings of all railroads are inadequate by any reasonable standard of measurement; and that the current state of inadequate earnings threatens the capacity of even the relatively profitable railroads to continue to retain and attract the amount of capital necessary to maintain and enhance their service capabilities. The weakened financial condition of the railroads undermines our ability to raise the substantial capital necessary to accommodate the staggering volumes of new coal traffic anticipated as a result of this country's conversion to coal as a primary energy source in accordance with the President's National Energy Plan.

It is my understanding that as a part of the 4–R Act of 1976, Congress recognized the importance of revitalizing the nation's railroad system, and directed the Commission to assist the railroads to attain earnings necessary to cover all costs and provide a return or profit (or both) on the capital employed in providing rail transportation service. Unless this Congressional mandate is carried out, the prospect that the railroads can survive in the private sector will surely be diminished and, just as surely, the purposes of Congress in enacting the 4–R Act will be frustrated.

Santa Fe's management has on various occasions assured officials of the Federal Government that the railroads will have the physical capability of handling the increased volume of coal traffic called for by the President's energy program. We have given these assurances with the admonition that the underlying financial considerations are another matter. If the railroads are led down the path of making heavy investment commitments to accommodate the coal traffic and, if the Commission then intervenes to prevent them from obtaining a reasonable return on those investments, I believe the survival of the entire industry would be in jeopardy.

In 1977, Santa Fe's coal traffic amounted to 5.7 million tons. In 1978, our coal traffic increased to 9.2 million tons. Due to the conversion from gas and oil to coal, however, and the large coal reserves located in Santa Fe's service area, we anticipate transporting over 20 million tons annually by 1980 and close to 32 million tons by 1987—over three times our present volume. By 1985, we expect coal to account for 20 percent of our total tons handled and over 10 percent of our total revenue ton miles. Thus it would be difficult to overstate either the importance of coal traffic to Santa Fe or the importance of Santa Fe as an essential link in the coal energy chain.

In order to handle the new coal traffic efficiently and economically, Santa Fe will have to invest hundreds of millions of dollars in plant and equipment.

Over the next five years (1979–1983), Santa Fe anticipates having to make gross capital expenditures of approximately $270 million solely to accommodate the new coal traffic. This will be comprised of about $150 million for locomotives and cars and $120 million for roadway improvements.

New investments in track structure and signalling will be required, particularly where the new coal traffic will move over what are now secondary lines with comparatively light traffic. Moreover, the movement of many heavy unit coal trains is going to require substantially increased future maintenance expenditures. Finally, the customized unit train operations demanded by the electric utilities and other large coal consumers, necessitating continuous train operation, requires us to acquire substantial numbers of expensive locomotives to accommodate the new traffic. In this context, I should emphasize that Santa Fe, despite a very aggressive locomotive acquisiiton program, is short of power due to unprecedented and unforeseen traffic increases. Thus implementation of new, continuous operation unit coal train service directly results in the necessity of obtaining many additional locomotives. Sante Fe's Board of Directors recently approved acquisition of 115 locomotives for delivery in 1979, at a cost of $82.9 million. This includes 54 locomotives specifically acquired for coal service.

The effectiveness of Santa Fe's continuing efforts to maintain its physical plant in a condition to handle the needs of its customers can be ascertained by examining the performance of the unit trains serving the Houston Lighting & Power Company's Smithers Lake plant. As originally planned, Santa Fe was to operate the trains on round trip schedules of 44 hours between Ft. Worth and the power plant, including four hours for unloading. Subsequently, we agreed to permit the utility to use five hours for unloading, with no corresponding increase in our portion of the total schedule. After a little more than one year's service, we have operated a total of 314 trains, 230 of which, or 73.2 percent, have made the round trip in less than our scheduled time.

Santa Fe's service capabilities for both existing and new freight traffic would not long survive in the absence of major new capital investments. This is a function of two prevailing conditions. First, like all railroads, ours is capital intensive and requires continuous new investment to modernize our plant and to preserve and improve our service capabilities. As an example of the amounts of money which are needed, our capital expenditures for 1978 were $194.3 million, which does not include replacement of track structure charged to expense. Second, while Santa Fe's plant has the short-term capability of handling increased traffic, we cannot handle significant sustained volumes of new traffic without major capital expansion. It is not our intent to handle anticipated new traffic by reducing the level of service we provide to our present customers.

The magnitude of our capital requirements is clearly substantial. For example, gross capital expenditures for the railroad for the last five years (excluding replacement of track structure charged to expense) were as follows:

	Amount (millions)
1974	$171.9
1975	180.9
1976	102.4
1977	168.6
1978	194.3
Total	818.1

These expenditures exceeded Net Railway Operating Income for the period by a total of $461.5 million, and we anticipate capital expenditures over the next five-year period to exceed $1 billion at current price levels. And in the face of such requirements, our ability to generate necessary capital will become more and more difficult unless earnings are improved.

The continued availability of necessary capital is threatened because of two related factors—inadequate earnings and economic inflation.

First, and of primary importance, are Santa Fe's unsatisfactory earnings and corresponding low rates of return on net investment and on shareholder's equity. In the decade of 1950–1959, our annual return on net investment ranged from a high of 7.20 percent to a low of 4.06 percent. In the same period we paid in the range of 3⅜ to 4⅝ percent interest for new debt financing. In the first half of the decade, retained earnings were such that we had no new debt financing and, in 1956, all equipment obligations had matured and we had no debt other than

mortgage bonds. In the decade of the sixties, our highest annual return on net investment was 5.03 percent in 1966, at which time we paid from 5 to 6 percent for new debt. In no other year did we earn as much as 5 percent on net investment. The following table shows our rate of return experience since 1970:

Year:	*Return on net investment (percent)*
1970	3.27
1971	5.19
1972	4.15
1973	3.95
1974	3.56
1975	3.74
1976	3.41
1977	3.82
1978	[1] 4.99

[1] Preliminary figure.

During this period, interest rates on new debt financing have greatly increased. Interest rates on equipment debt issued in the period of 1979 to 1978 range from 6⅞ to 8½ percent. To summarize, in less than thirty years, we have gone from a position to earning almost twice the rate of our debt cost to presently earning about half of that rate, and there is every indication that the cost of money will be increasing in the immediate future.

Another manifestation of unsatisfactory financial performance is Santa Fe's return on common equity, especially by comparison with the performance of other industries with which we must compete for capital. The following tables show our return on equity experience since 1970:

Return on common book equity

Year:	*Rate of return (percent)*
1970	3.43
1971	5.63
1972	5.62
1973	5.96
1974	5.28
1975	4.34
1976	4.22
1977	5.43
1978	[1] 6.70

[1]Preliminary figure.

In recent years Santa Fe's equity has consistently earned returns well below those paid to purchasers of its bonds. Clearly this performance does not encourage the raising of new equity capital.

Our economic and financial consultants advise us that we must earn in the range of 12.5 percent on our investment after provision for income taxes, in order to be able to attract needed capital. This "cost of capital" far exceeds the railroad's overall return on investment. Should this circumstance persist unabated for very long, Santa Fe's ability to attract and retain the capital required to maintain and enhance its service capabilities will be placed in jeopardy.

A second major reason why we will face increasing difficulty in meeting our capital requirements is economic inflation. We must pay ever greater prices for those capital items which are essential to modernize our plant. Over the last five years, for example, the price of locomotives has gone up 45 percent; rail has gone up 54 percent; and signal relays have gone up 66 percent.[1] Because Santa Fe's net income (including subsidiaries) has been fairly level at a time when inflation has reached critical proportions, we have had to rely increasingly on debt financing to support our capial programs.[2] Long term debt due after one year increased

[1] Over the last five years the AAR Index of Railroad Material Prices and Wage Rates has increased 76.7 percent.

[2] Net income of Santa Fe and its subsidiaries for 1973–1978 was:

	Millions
1973	$74.0
1974	67.2
1975	58.7
1976	58.0
1977	79.0
1978	93.6

from $334.5 million in 1973 to $504.5 million in 1978. Annual interest charges have more than doubled in the period 1969 to 1978. In 1976 and 1977, Santa Fe borrowed $125.7 million at interest rates of 6⅝ to 8 percent. In 1978 we borrowed $45.2 million at interest rates of 8⅛–8½ percent—raising our annual interest payments to over $35.0 million. Such circumstances cannot be allowed to persist indefinitely if Santa Fe is to continue to be able to provide high quality, efficient rail transportation.[3]

Moreover, retained earnings have become increasingly insufficient as a source of capital, primarily as a consequence of inflation and also because such earnings have been eroded by higher interest charges. As I have already explained, Santa Fe faces the possibility of a higher cost of borrowed funds and, in any event, debt financing alone would be a prohibitively expensive way to meet all of our needed capital improvements. One of the major items in our capital program in any given year is improvement to roadway and structures, and long-term debt financing for these purposes is not available due to existing mortgage provisions.

During the thirties Santa Fe was able to survive years of low rates of return because the entire economy was depressed and the cost of capital was relatively low. In the decade of the sixties, we had very modest rates of return, but capital was still available at reasonable rates and economic inflation was in its infancy. Today, the impact of inflation is overwhelming and our rates of return are inadequate to attract and retain equity capital. Moreover, cash flow from depreciation, due to inflation, falls increasingly short of providing funds to replace plant and equipment.

The railroads' disappointment with many of the Commission's interpretations of the 4–R Act is well-known and it is not my purpose here to give my opinions as to a realistic basis for determining "market dominance" (Ex Parte 320), or whether general rate increases should be "de-emphasized" (Ex Parte 343), or any of the several other restrictions which the Commission has read into the carriers' ratemaking initiative. Rather, I want to emphasize my view that western coal traffic presents a critical opportunity for the railroads to move toward attaining the goals of the 4–R Act and, if Congress or the Commission should impose ratemaking limitations beyond those which already exist, the ability of the western rail system to survive in the private sector will be in great jeopardy. As far as Santa Fe is concerned, there is probably no implementation of the 4–R Act more vital to our future than application of adequate revenue standards to coal rates.

It is fundamentally erroneous to contend that any railroad has a "monopoly" on the movement of western coal. I have been directly involved in Santa Fe's negotiations with potential coal shippers and my experience confirms that there is substantial competition among railroads and among origins and dsetinations for the transportation of western coal. It has been common for negotiating shippers to switch carriers and coal sources in the midst of our rate discussions, and we have even had this occur during the course of litigation before the Commission concerning the rate level. Indeed, it is customary for large electric utilities to obtain competing rate quotations from different carriers based on various routings and destinations.

It is my firm conviction that coal rates at the level recently approved by the Commission in connection with unit train movements to Houston, San Antonio, and Kings Mill are significantly below any rationally conceived maximum level. Indeed, the rates determined in these cases are at or below the level of fully allocated costs. Santa Fe must have the freedom to set coal transportation prices at higher levels where justified by the market value of our service and the demand for that service. Our present inadequate revenues and substandard earnings require that Santa Fe and the other western lines be permitted to exercise differential pricing to the fullest extent consistent with market conditions.

I have two reasons here for trying to emphasize my belief that differential pricing in accordance with demand is both a basic fact of life in the railroad industry and is indeed beneficial to all segments of the shipping public. First, this fact highlights the need for giving revenue adequacy a primary role in individual coal rate proceedings. Second, contentions have recently been advanced that there is something unfair or at least suspect when rail rates bear divergent ratios of revenues to costs.

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[3] It must be kept in mind that debt must be repaid out of earnings and principal amortized with after-tax dollars.

It is a fundamental economic fact in the railroad industry that market and intermodal competition act to create a wide spectrum of demand for rail service and that rail rates, of necessity, must be tuned to these differing levels of demand. Not only is this an unavoidable circumstance, but the railroads' ability to adjust their rates to meet varying levels of demand is of benefit to the entire shipping public. Shippers at the high end of the specrtum, whose demand for rail service is comparatively inelastic, benefit from the railroads' ability to charge rates moderately above variable costs for highly competitive traffic does make a contribution to fixed costs. Were such rates arbitrarily increased due to some uniform cost/revenue formula, the competitive traffic would be lost, and the higher rated traffic would have to bear an even greater portion of fixed costs. The only alternative would be a financial collapse of the railroad industry.

In the light of the foregoing, I believe it is abundantly clear that if the Congressionally mandated goal of revenue adequacy is to be achieved, the present substandard earnings of Santa Fe and other railroads must be given central importance in all rate proceedings, including those involving coal, and the notion that differential pricing of services in accordance with competitive circumstances is somehow wrong must be quickly dispelled.

Santa Fe's experience so far with western coal—and that of many other western railroads—has been that a combination of market forces has prevented us from achieving anything close to a maximum reasonable level in our rates. However, our revenues are so inadequate that our service capabilities will be threatened in the absence of improved earnings. In my opinion, the railroads' need for adequate revenues should be the primary guideline for judging western coal rates and there should be no interference with the forces of the marketplace which are proving quite sufficient to hold rates within any rationally conceived zone of reasonableness.

An improved financial viability on the part of the railroads will enable us to make needed investments—thus contributing to efficiency and holding down price increases in the long run. Such improved financial viability is therefore anti-inflationary—as recognized by the Council on Wage and Price Stability in the San Antonio rate proceeding.

Improved finances are also essential from the standpoint of National Energy Policy. Recent events in the area of nuclear energy emphasize the importance to the nation of coal. Huge volumes of coal will be consumed in the future as demand for electricity increases and supplies of foreign oil or gas become more expensive—or unavailable at any price. For these reasons the country needs a healthy, vigorous railroad system that can serve as a conveyor belt from the mines to utility generating stations. Energy policy—balance of payments—national security—all these considerations require a healthy railroad system, with the financial strength to invest in plant and equipment needed to provide service.

There is no serious issue, in my opinion, as to whether we need healthy, efficient railroads. The issue is whether the needed investments are to be financed through the private financial markets—or whether, instead, we will have a nationwide system of Conrails, financed by the U.S. Treasury, and ultimately the U.S. taxpayer. This is an issue I believe Congress decided in 1976 when it took the first limited steps in the direction of deregulation, and also created a new rule of ratemaking for railroads.

Nowhere is it more important that the new Congressionally-mandated approach to ratemaking be implemented than in connection with transportation of Western coal.

BEFORE THE

INTERSTATE COMMERCE COMMISSION

SAN ANTONIO, TEXAS ACTING BY AND THROUGH ITS CITY PUBLIC SERVICE BOARD,	)	
Complainant,	)	
v.	)	Docket No. 36180
BURLINGTON NORTHERN INC., THE COLORADO AND SOUTHERN RAILWAY COMPANY, FORT WORTH AND DENVER RAILWAY COMPANY, and SOUTHERN PACIFIC TRANSPORTATION COMPANY,	)	
Defendants.	)	

INTERVENOR DEPARTMENT OF ENERGY'S STATEMENT OF FACT AND ARGUMENT

Eric J. Fygi
Acting General Counsel
Department of Energy

Bruce C. Driver
Office of General Counsel
Department of Energy
Attorneys for Intervenor

Due Date: February 13, 1978

BEFORE THE

INTERSTATE COMMERCE COMMISSION

CITY OF SAN ANTONIO, TEXAS ACTING BY AND THROUGH ITS CITY PUBLIC SERVICE BOARD,	)	
Complainant	)	
v.	)	Docket No. 36180
BURLINGTON NORTHERN, INC., COLORADO AND SOUTHERN RAILWAY COMPANY, FORT WORTH AND DENVER RAILWAY COMPANY, and SOUTHERN PACIFIC TRANSPORTATION COMPANY,	)	
Defendants	)	

INTERVENOR DEPARTMENT OF ENERGY'S
STATEMENT OF FACT AND ARGUMENT

INTRODUCTION

On December 30, 1977, the United States Department of Energy (DOE) filed a petition for leave to intervene in the re-opened proceedings of the above-captioned Docket. Simultaneously, DOE filed a petition in support of Complainant's Petition for Extension of Time within which to File its Reply Statement. DOE understands that its Petition for Leave to Intervene has been granted. DOE also understands that its Statement of Fact and Argument is due at the same time at which Complainant's Statement is due, namely, February 13, 1978, as established by order of the Interstate Commerce Commission (Commission) dated January 3, 1977.

This Statement of Fact and Argument, submitted in light of DOE's understanding, is supported by the verified testimony of Frank D. Haines, Chief of the Power Supply Planning Branch of the Office of Utility Systems, Economic Regulatory Administration, Department of Energy.

ARGUMENT

In its Order of October 27, 1977, re-opening this proceeding, the Commission stated that evidence could be submitted relating to allegations of error regarding the Commission's costing methodology in its report and order of October 13, 1976, new cost evidence based on actual operating experience, and certain existing rate comparisons. The Commission also stated that the parties may also address the question of "a fair, reasonable and economic profit or return on these movements."

DOE's evidence in the re-opened proceeding relates to the issue of fair, reasonable and economic profit or return. Defendants have submitted evidence in this proceeding of national energy policy in support of the "intensification" of the need for a fair, reasonable and economic profit or return. See the Verified Statement of Richard J. Barber, pp. 15-23. In addition, defendants have submitted evidence purporting to show that there exists "a manifest need for rates to be established, wherever the economic conditions permit, that help correct the prevailing earnings shortfall by generating revenues in excess of costs." */ Barber, p. 27. Defendants seem to be contending that a "fair profit"

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*/ See also Barber, p. viii, wherein it is said:

> "Because much traffic moves at rates below fully allocated costs, railroads must be allowed to set rates, where possible, well above costs so as to yield a profit or return sufficiently great to provide a fair return on their overall investment."

for defendants in this proceeding would entail tariffs set at levels above cost, in view of defendants' need to raise revenues to transport coal to assist in implementation of national energy policy.

While defendants no doubt are correct in their assertion that large amounts of capital will need to be accumulated to develop adequate coal transportation facilities, defendants' implication that some of this capital should be raised by rates set above cost is ill-advised.

It is clear from the accompanying testimony of Mr. Frank D. Haines that system production costs and type of fuel burned by San Antonio show considerable sensitivity to the level of unit train tariffs. Among other things, Mr. Haines' testimony demonstrates that:

1. At a unit train tariff level of between $15.64 and $18.23, it becomes cheaper to burn all oil at the Deely generating station.

2. Over the next 22 years considerably less coal will likely be burned by San Antonio as tariff levels rise under conditions of economic dispatch. In short, the use of coal by San Antonio appears to demonstrate considerable elasticity to unit train tariff levels.

3. Oil and gas prices would have to rise significantly above present levels in order to make the furnishing of coal burning facilities at the Deely Station an economic investment.

Thus, coal use by San Antonio is jeopardized as unit train tariffs rise. Futhermore, high unit train tariffs for San Antonio could act to discourage other utilities both from contracting for coal and from making investment decisions to build coal burning capability.

At this time DOE does not know the costs of the movement of coal which is the subject of this proceeding and defers to the Commission to determine such costs. In view of the potential effect of unit train tariffs on coal burning by San Antonio and on the decisions of other utilities, however, it is imperative that the Commission not prescribe a tariff above the costs associated with the movement of coal to complainant. A "fair" or "reasonable" profit based on revenues above cost, as defendants request, could very likely have an adverse effect on national energy policy, more than wiping out any beneficial impact on national energy policy implementation occasioned by accumulation of capital for future coal transport.

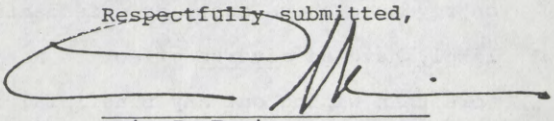
A determination to establish a tariff at no higher than cost would be in the public interest, a criterion often cited by the Commission in its decisions. (See, for example, Hanson Packing Co. v. Baltimore and O.R. Co., 201 I.C.C. 75, (1934): "The public interest is the first consideration in determining the reasonableness of rates....") The 4-R Act underlines the Commission's responsibility to take into

account the public interest in its rate prescriptions. The Report of the Senate Committee on Commerce on the 4-R Act indicates that the public interest should be viewed widely:

> "...ratemaking revisions to assist the railroads must continue protections for the public interest as a whole." Report of the Senate Committee on Commerce on S.2718. S. Rept. 94-499, 94th Cong., 1st Session (1974), p. 14.

In view of the enunciated policy of both President Carter in the National Energy Plan and Congress, in a number of statutes, to substitute coal for oil and gas, it would not be in the public interest for the Commission to prescribe a tariff for the movement of coal by defendants to San Antonio at a level higher than the costs associated with such movement.

Respectfully submitted,



Eric J. Fygi
Acting General Counsel
Department of Energy

Bruce C. Driver
Office of General Counsel
Department of Energy

TESTIMONY OF FRANK D. HAINES

Q. Please state your name and business address.

A. My name is Frank Doncaster Haines. My business address is Room 4319, Federal Building, 12th and Pennsylvania Avenue, N.W., Washington, D.C. 20461.

Q. By whom are you employed and in what capacity?

A. I am employed by the United States Department of Energy. I am Chief of the Power Supply Planning Branch of the Office of Utility Systems, Economic Regulatory Administration.

Q. What is your educational and professional background?

A. My educational and professional background is set forth in Exhibit I, attached hereto.

Q. What is the purpose of your testimony in this Docket?

A. Both President Carter and The Congress of the United States have enunciated a clear national policy in favor of the substitution of coal for oil and gas. The Department of Energy is opposed to railroad tariffs which represent more than the cost of service because of the effects such tariffs may have in creating disincentives to implement measures consistent with this national policy. My

testimony does not speak to the cost of service data introduced as evidence in this proceeding. Indeed, the Department defers to the Commission on the matter of cost of service. However, the Department does want to demonstrate how sensitive the economics of fuel generation are to the cost of transportation for these fuels. The Department urges that the Commission be conscious of this sensitivity and not increase the unit train tariffs which are the subject of this proceeding to any amount greater than the true cost for conveying the coal.

My testimony addresses the economic and fuel use effects of several levels of tariffs for coal transported by unit train to the City of San Antonio. In order to ascertain these effects I conducted a study of the San Antonio electric utility system. The results of this study show the sensitivity of (1) the quantity of coal burned in San Antonio's only coal generating facility, the J.T. Deely station, and (2) overall system production costs to various unit train tariff levels.

Q. Would you please describe this study?

A. Yes. With the assistance of a special purpose computer program, I performed four separate tasks. First, I found the range of unit train tariffs at which in 1978 it would become cheaper to burn oil rather than coal at the Deely station. Second, I calculated how much coal would be

burned by the City between 1978 and 2000, under an assumption of economic dispatch, at four assumed tariff levels. Third, I calculated the cost to the City of San Antonio of electricity in each year from 1978 to 2000 at these same assumed unit train tariffs under the assumption that all coal contracted for by the City with the Sun Oil Company (2.7 million tons per annum) is burned to generate electricity by San Antonio. Finally, under an assumption of economic dispatch, I then re-calculated the price to which oil and gas would have to rise at each of these four unit train tariffs such that the money that would be saved by burning coal instead of higher price oil and gas would pay back (on a 20 year basis) the incremental capital cost associated with the construction of coal burning capability at the J.T. Deely station.

Q. Would you please describe the computer program and input data you used in this study?

A. Yes. The name of the program is PROCOS. It has been purchased from Systems Control Incorporated by the City of San Antonio (fourteen other utilities are also users) for the purpose of calculating system production costs. To calculate system specific costs for the City of San Antonio electric utility, a substantial amount of data was fed into the program. These data include the heat values of the fuels used to generate electricity on the system, the delivered

costs of such fuels, certain performance characteristics of system generating units and system reliability criteria. A capacity expansion schedule and schedule of retirement of old generating units are additional data inputs. Also, a very detailed description of the present-day system load characteristics, including weekly and daily load variations, as well as the system's long-run load growth forecast, are fed into the program as input data.

Using these variables, the computer program then calculates a time series of the amount of electricity produced by each powerplant on the system, the type of fuel burned and the costs associated therewith. If the program is not restrained, it will calculate the least cost, or economic dispatch, result for the system as a function of the data inputs into the program. However, the computer can be reloaded and forced to calculate costs associated with an uneconomic dispatch of powerplants resulting, for example, from a fuel burning constraint such as a forced coal burn.

Q. How did you use the PROCOS program to obtain the results of your study?

A. I used the computer to complete the four tasks to which I alluded above. In order to complete the first task I ran the system, for 1978 only, with current oil and gas prices and for each of the following unit train tariffs: $11.94, $13.40, $15.64 and $18.23 (per ton of coal). The

$11.94 is the existing tariff, the $13.40 and $15.64 were from earlier City of San Antonio computer runs and cost studies and the $18.23 is the new proposed tariff. By using these existing numbers I was able to avoid extensive program reloading. In addition, I re-ran the program and re-simulated the entire electric system assigning only #6 oil to the Deely station. This enabled me, for that year and on the basis of an optimized (economic dispatch) computer solution, to determine at what tariff, in 1978, it would be cheaper to burn oil at the Deely station.

The second task entailed using the same tariffs to create a forecast of annual system production costs and level of fuel consumption for all years from 1978-2000.

For the third task I ran the program with the various tariffs as before except that the program was altered to force the Deely station to burn 2.7 million tons of coal per annum. Forcing such a coal burn is not economic. The same type of annual cost and fuel consumption levels calculated for the second task were calculated in the third task.

For the fourth task the prices of oil and gas were raised so that on an average basis for the next five years the difference in system-production costs between the Deely station on coal at an $11.94 unit train tariff would be $12.5 million. This figure was used because the City of San Antonio had indicated to me that the incremental cost associated with the construction of coal burning capability at

the Deely station was approximately $125 million. Under the assumption of an annual fixed charge rate of 10 percent and a payback period of twenty years, the system would recover the capital costs associated with the construction of coal burning capability at the Deely station only if the difference between the production cost associated with burning coal as against oil is at least $12.5 million annually.

Q. What are the results of the study?

A. The results of the study through 1982 are set forth in tabular form in Exhibits II and III, attached hereto. Exhibit II is a summary of the next five years of costs for the operation of the entire San Antonio electric system. These costs shown were calculated under three assumptions: (1) economic dispatch, (2) forced coal burn and (3) oil, only, burned at the Deely station. For purposes of calculating the costs under the third assumption, it was further assumed that the coal equipment at Deely is shut down and mothballed. It should be noted that all costs calculated are stated in 1978 constant dollars.

Exhibit III shows how coal, oil and natural gas consumption are affected by unit train tariff levels under an assumption of economic dispatch.

Q. What are the key conclusions of the study?

A. At a tariff of between $15.64 and $18.23 it becomes cheaper in 1978 to operate the Deely station on #6 residual oil rather than coal.

B. Under the assumption of economic dispatch the system would burn the following tons of coal, barrels of oil and MCF's of gas over the next five years and between 1978 and 2000:

	Next 5 Year Total		
Tariff $/ton	Coal$X10^3$tons	Oil$X10^3$barrels	Gas MMCF
11.94	13,404.1	22,669.7	325.7
13.40	13,404.1	22,669.7	325.7
15.64	12,506.2	24,309.4	325.8
18.23	10,855.1	28,578.9	320.7

	Total 1978 - 2000		
Tariff $/ton	Coal$X10^3$tons	Oil$X10^3$barrels	Gas MMCF
11.94	50,975.8	98,883.2	3,717.3
13.40	49,974.5	101,440.4	3,717.3
15.64	47,646.9	105,621.3	3,668.6
18.23	42,805.4	118,246.9	3,675.7
Oil only on Deely	None	231,308.6	4,693.1

Particularly above a tariff level of $13.40 (and under economic dispatch), the system would burn significantly less

coal than under lower tariffs in both the short and long term. Also, even at the existing tariff level, the system under economic dispatch would not, except for 1979 and 1980, burn all the coal for which San Antonio now has a contract.

C. At current gas and oil prices and for each of the unit train tariffs set forth below the system under economic dispatch would experience the following total production costs:

Tariff $/ton	Next 5 Year (1978-1982) Production Costs (M$)
11.94	605
13.40	624
15.64	649
18.23	679

If the 2.7 million tons are force-burned then production costs are as follows:

Tariff $/ton	Next 5 Year Production Costs (M$)
11.94	615
13.40	633
15.64	663
18.23	699

If oil at $10.35 per barrel for #6 residual is substituted for coal then the production cost for the next five years is 660 million dollars. Thus, higher tariff

levels increase systems production costs dramatically, particularly when the Deely station is forced to burn all contracted-for coal.

D. Oil and gas prices would have to rise to the following levels for each of the unit tariffs indicated for San Antonio to recover the incremental capital investment associated with the construction of coal burning capability at the Deely Station:

Tariff $/ton	Oil* $/barrel	Gas** $/MCF
11.94	10.83	2.30
13.40	11.44	2.43
15.64	12.34	2.62
18.23	13.40	2.85

Q. Does this complete your testimony?

A. Yes, it does.

NOTE: Current oil and gas prices in San Antonio are:

* $10.35 per barrel for #6 residual oil.

** $2.20 per thousand cubic feet for natural gas.

Intervenor Department of
Energy
Exhibit No. (FDH-I)
Witness Frank D. Haines
Page 1 of 2

EXHIBIT I - RESUME OF EDUCATIONAL AND PROFESSIONAL EXPERIENCE - FRANK DONCASTER HAINES

I have a Bachelor of Science Degree in Marine Transportation from the United States Merchant Marine Academy, and a second Bachelor of Science Degree in Mechanical Engineering from Columbia University. I also have a Masters of Science Degree in Computer Science from the American University and a Master of Arts Degree in Economics from the Catholic University of America. Additionally, I am a graduate of the Oak Ridge School of Reactor Technology and am also a graduate of the United States Department of Agriculture's Graduate School with a Certificate in Systems Design (Computer Systems). I have taken a number of other graduate courses in engineering and mathematics and, having completed all course requirements for a Ph.D. in International Economics at Catholic University, am now working on my dissertation. I have also completed the student engineering training program with Combustion Engineering Company, a boiler manufacturing company.

With respect to my professional background, after serving aboard the SS Mobil Oil as 3rd assistant marine engineer and aboard a destroyer as an officer in the United States Navy, I worked as an engineer in the marine power

plant and propeller design sections of the Gibbs and Cox Company, a firm of naval architects and marine engineers. I then worked as an engineer with the Combustion Engineering Company (from 1953 to 1960). My work included "firing up" or starting newly constructed coal-fired electric utility boilers and work on naval nuclear power plant projects as an engineering designer and analyst. Then, I worked for the Atomic Energy Commission (from 1960 to 1969) as a project manager and analyst on fast reactor and space nuclear reactor research projects and on space and terrestrial radioisotope development programs. I next worked for the Nuclear Regulatory Commission where, among other activities, I developed a package of computer programs and techniques relative to the licensing of nuclear power plants. After transferring to the Federal Energy Administration in 1976, I broadened my analysis in this area to include a forecasting capability for all new domestic powerplants. In addition while at FEA I organized and participated in a study which compared electrical generating costs for coal and nuclear powerplants. Currently, as a Branch Chief in the Department of Energy, I direct a staff of engineers analyzing various bulk power supply planning and adequacy issues.

Intervenor Department of Energy
Exhibit No. (FDH-I)
Witness Frank D. Haines

EXHIBIT II - FIVE YEAR SYSTEM COST SUMMARY - COAL AND OIL
(Thousands of Dollars)

Tariff	Year	Economic Operation		Forced Coal Consumption
11.94	1978	115,909.3		115,559.4
	1979	123,380.0		124,162.5
	1980	128,197.6		131,303.4
	1981	120,337.8		121,657.0
	1982	117,316.7		122,105.6
	Total	605,141.4		614,787.9
13.40	1978	119,759.7		119,418.5
	1979	127,424.3		127,423.8
	1980	132,637.2		134,862.6
	1981	124,171.5		126,171.0
	1982	120,725.7		125,566.7
	Total	624,718.4		633,442.6
15.64	1978	124,059.1		125,081.5
	1979	132,083.6		132,858.7
	1980	138,321.8		139,764.8
	1981	129,146.6		133,116.4
	1982	125,245.3		132,575.7
	Total	648,856.3		663,397.1
18.23	1978	129,841.1		131,950.3
	1979	138,145.6		140,111.2
	1980	145,171.0		146,698.7
	1981	135,193.1		140,729.4
	1982	130,715.4		139,774.7
	Total	679,066.2		699,264.3
ONLY OIL BURNED AT THE DEELY STATION	1978		126,053.5	
	1979		134,019.4	
	1980		140,792.9	
	1981		131,528.6	
	1982		127,558.0	
	Total		659,952.4	

Intervenor Department of Energy
Exhibit No. (FDH-I)
Witness Frank D. Haines

EXHIBIT III - FIVE YEAR FUEL CONSUMPTION SUMMARY
ASSUMING ECONOMIC DISPATCH

Tariff	Year	Coal 10^3 tons	Oil 10^3 barrels	Gas MMCF
11.94	1978	2,636.0	4,842.1	51.1
	1979	2,769.1	5,265.5	67.6
	1980	3,039.8	5,017.1	100.8
	1981	2,625.0	4,053.5	61.1
	1982	2,334.2	3,991.5	45.1
	Total	13,404.1	22,669.7	325.7
13.40	1978	2,636.0	4,842.1	51.1
	1979	2,769.1	5,265.5	67.6
	1980	3,039.8	5,017.1	100.8
	1981	2,625.0	4,053.5	61.1
	1982	2,334.2	3,491.5	45.1
	Total	13,404.1	22,669.7	325.7
15.64	1978	2,436.3	5,176.4	51.1
	1979	2,540.6	5,676.7	67.6
	1980	2,829.8	5,423.3	100.9
	1981	2,473.5	4,340.1	61.1
	1982	2,226.0	3,692.9	45.1
	Total	12,506.2	24,309.4	325.8
18.23	1978	2,069.8	6,118.4	48.5
	1979	2,171.1	6,626.9	68.9
	1980	2,495.6	6,282.1	100.2
	1981	2,150.5	5,184.8	59.0
	1982	1,968.1	4,366.7	44.1
	Total	10,855.1	28,578.9	320.7
ONLY OIL BURNED AT THE DEELY STATION	1978		11,447.3	48.1
	1979		12,199.6	75.6
	1980		12,707.1	115.0
	1981		10,746.6	65.1
	1982		9,489.8	57.1
	Total		56,590.4	360.7

VERIFICATION

DISTRICT OF COLUMBIA)

) SS:

WASHINGTON, D. C.)

Frank D. Haines, being duly sworn, deposes and says that he has read the foregoing statement, knows the contents thereof, and that the same are true as stated.

Frank D Haines

Subscribed and sworn to
before me this 13th
day of February 19 78.

Thomas H. Kemp
Notary Public

My commission expires My Commission Expires September 14, 1979

CERTIFICATE OF SERVICE

I hereby certify that I have this day, February 13, 1978, served the foregoing Statement of Fact and Argument of the United States Department of Energy in the above-entitled proceeding upon all parties on a service list of this proceeding obtained from the Commission on Friday, February 10, 1978, by first class mail, postage prepaid.

Bruce C. Driver
Bruce C. Driver

February 13, 1978

BEFORE THE

INTERSTATE COMMERCE COMMISSION

WESTERN COAL INVESTIGATION-GUIDELINES FOR RAILROAD RATE STRUCTURE	)))	EX PARTE NO. 347

UNITED STATES DEPARTMENT OF ENERGY

OPENING STATEMENT OF FACT

AND ARGUMENT

LYNN R. COLEMAN
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United States Department of Energy

DUE DATE: AUGUST 4, 1978

SUPPORTING VERIFIED STATEMENTS

Statement of Alvin L. Alm

Statement of Robert L. Borlick

Statement of Michael B. Rosenzweig

Statement of Robert Bardwell

Statement of Harter Williams

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INTRODUCTION

By order served May 17, 1978, the Interstate Commerce Commission announced its investigation into appropriate rate guidelines for western coal movements, indicating that the Commission contemplated that the guidelines determined in the proceeding would apply only in instances where it is found that a carrier has market dominance. Viewing this investigation as a suitable vehicle for the expression of its concerns regarding the potential impact of rail rates for the movement of western coal on the implementation of National Energy Policy, the Department of Energy (DOE) filed a Statement of Intent to Participate in Ex Parte No. 347. This Statement of Fact and Argument is filed as a result of DOE's analysis of the nature of that impact.

The fundamental precept presented in this Statement is quite simple: the Commission's actions in establishing just and reasonable tariffs for the movement of western coal in market dominant situations can have a substantial impact on the implementation of National Energy Policy. Thus, the Commission must consider such impact in its rail tariff determinations.

The nature of such impact is threefold. First, higher coal tariffs can affect the amount of coal burned by an electric utility by virtue of the impact of such tariffs on the operating costs associated with coal-fired generating units. Second, higher coal tariffs can affect the investment decisions of utilities and industrial firms to replace existing oil and gas-fired capacity with coal-fired capacity. Lastly, higher coal tariffs can have significant adverse impacts on the consumers of electricity. DOE argues in this Statement that, in order to reduce the adverse impact of its tariff determinations on the implementation of National Energy Policy, the Commission should refrain from the prescription of tariffs which would effectively transfer most or all of the savings from the conversion of existing oil and gas-fired capacity to coal-fired capacity from the electric utility and the consumer of electricity to the carrier.

Drawing on evidence contained in five Verified Statements of Fact, DOE also argues that the Commission should adopt as the floor of the zone of reasonable rates for a movement of western coal in market dominant situations a "Minimum Viable Tariff" designed to recoup for the railroad only the incremental costs associated with the movement.

Tariffs should be set above the floor to reflect consideration of the impact on National Energy Policy, the need to establish adequate revenue levels for railroads and the need to protect the public from the exaction by the railroad of unreasonable monopoly profits. Finally, in order to obviate the potential chilling effect of its tariff determinations on replacement of oil and natural gas boiler capacity and to remove the uncertainty associated with investment in replacement capacity, the Commission should accept for filing tariffs which embody agreement between shipper and carrier.

I. In Determining Just And Reasonable Railroad Tariffs For The Transportation Of Coal In Situations Of Market Dominance, The Interstate Commerce Commission Must Consider The Impact Of Such Tariffs On The Attainment Of National Energy Policy.

Congress has given to the Interstate Commerce Commission (hereinafter "ICC" or "Commission") responsibility for regulating railroads within the statutory framework provided by the Interstate Commerce Act (49 U.S.C. §1 et. seq.). Because of the congressional recognition of the importance of adequate transportation services for our national economy, the Commission has been compelled to consider the impact of its regulatory orders not only on the railroads but also on the needs of the public and industrial and commercial interests which are dependent on rail transportatio services. 1/ Thus, in any determination concerned with just and reasonable railroad tariffs, the Commission has balanced national transportation policy with federal policies which affect other segments of the national economy in order to achieve a result which would best serve the public interest.

1/ Out of consideration for the fact that railroad service affects "[e]mployment levels, net industrial and agricultural incomes, the cost of living to consumers, and indeed, the very social and economic development of every state ...", Congress recently amended the Interstate Commerce Act by enacting the Railroad Revitalization and Regulatory Reform Act of 1976 (P.L. 94-210) to provide, inter alia, legislative assistance to the railroads. S.Rep. No. 499, 94th Cong., 2d Sess. 7 (1975) reprinted in (1976) U.S. Code Cong. & Adm. News 20.

A. The Interstate Commerce Commission must establish railroad tariffs which are just and reasonable.

According to the terms of the Interstate Commerce Act, the Commission has the duty and responsibility to ascertain that all railroad tariffs are just and reasonable. Because a just and reasonable railroad tariff is a question of fact, 2/ the law recognizes that the Commission can set one of several rates for any particular shipment, and each rate could be just and reasonable. This spectrum of just and reasonable rates creates a zone of reasonableness, 3/ and the carrier is at liberty to adjust its rate at any point within that zone. 4/

It is well established that the Commission has the authority in the course of the ratemaking process to value and weigh broad criteria in any manner which appears appropriate; in so doing, the Commission has considerable flexibility. 5/ Rather than rely upon a mechanical formula for discerning a just and reasonable tariff, the Commission is encouraged to exercise its judgmental discretion. 6/

2/ Pa. R.R. Co. v. U.S., 315 F.2d 460 (3d Cir. 1963).

3/ Central of Ga. R.R. v. U.S., 379 F.Supp. 976 (D.D.C. 1974).

4/ Westinghouse Electric Corp. v. U.S., 388 F.Supp. 1309 (W.D. Pa. 1975).

5/ Id.

6/ Id.

Before formulating a final determination as to the justness and reasonableness of a particular tariff on the basis of broad criteria, however, the Commission also is bound to exercise its discretion in conformity with national transportation policy 7/ and other established federal policies entrusted to the several federal agencies. 8/ Only after evaluating the effect of its regulatory decision on all relevant federal policies may the Commission adjust railroad tariffs in a manner which best serves the public interest. 9/

7/ Mo. Pac. R.R. Co. v. U.S., 203 F.Supp. 629 (E.D. Mo. 1962).

8/ Burlington Truck Lines v. U.S., 371 U.S. 156 (1962).

9/ Id.

B. In determining just and reasonable railroad tariffs, the Commission must consider not only national transportation policy but also the impact of its decisions on other federal policies.

The most explicit expression of congressional policy in transportation matters in embodied in the National Transportation Policy (49 U.S.C., preceding §1). In any proceedings concerned with just and reasonable railroad rates, the Commission is required to consider all relevant elements of that policy. Nonetheless, consideration of national transportation goals does not permit the Commission to ignore the ramifications of its regulatory decisions on other federal programs which are designed to effectuate national policies in other segments of the economy.

The case of Baltimore & O. R. Co. v. U.S. (345 U.S. 146 92 (1953)) is illustrative. In prescribing maximum car load tariffs for transporting certain kinds of fresh vegetables, the Commission considered not only the possible harmful effects of high railroad tariffs on the price and sales of vegetables, but also the ramifications of an excessive railroad tariff on the general economic health of the country. Consequently, the Commission issued a rate order prescribing a rail tariff lower than that requested by the Baltimore and Ohio Railroad Company.

In presenting the tariff for review before the United States Supreme Court, the appellant argued that the rates were noncompensatory, barred by the 5th Amendment and should be invalidated. Mr. Justice Black, delivering the opinion for the Court, disagreed. He found that the rate orders in question were not only just and reasonable but also demonstrated a proper balancing of national policy goals by the Commission in order to best serve the public interest.

> For not only are fair decisions as to the vegetable rates vital to the welfare of farmers and whole sections of the country; the health and well-being of the Nation are involved. Moreover, Commission power to adjust rates to meet public needs is implicit in the congressional plan for a nationally integrated railroad system. (Citations omitted.) And so long as rates as a whole afford railroads just compensation for their over-all services to the public the Due Process Clause should not be construed as a bar to the fixing of noncompensatory rates for carrying some commodities when the public interest is thereby served. (345 U.S. at 150)

In balancing the needs of the railroad industry with the needs of farmers and consumers, the Commission found the paramount needs of the public to rest with the salutary effects of restrained railroad tariffs. Hence, without compromising the purposes of the Interstate Commerce Act or the congressional goals contained in the National Transportation Policy, the Commission paid deference to a national agricultural policy of protecting the welfare of

the farmer and designed a rail tariff based upon the effect of that tariff on the general economic health of the country. The Supreme Court found both the decision-making process and the decision to be sound.

Recognizing the economic effect of its ratemaking decision on agriculture and the national economy, the Commission issued an order which resulted from a consideration of broad national policy criteria. Not only did the Supreme Court approve the Commission's consideration of such criteria but, nine years later, in Burlington Truck Lines v. U.S. (371 U.S. 156 (1962)), where national transportation policy goals appeared irreconcilable with the purposes of national labor policy goals, the Supreme Court remanded the Commission's decision in part because of the Commission's failure to consider the effect of its decision on that other federal policy. Absent that consideration and despite consideration of national transportation policies, the Supreme Court found the Commission order to be defective.

Although the Supreme Court readily acknowledged the Commission's authority to regulate motor carriers, the Court did not hesitate to instruct the Commission that its choice of remedies should be selected carefully because of the possible ramifications of its decision on national labor

relations policy.

> The Commission acts in a most delicate area here, because whatever it does affirmatively (whether it grants a certificate or enters a cease-and-desist order) may have important consequences upon the collective bargining processes between the union and the employer. The policies of the Interstate Commerce Act and the labor act necessarily must be accommodated, one to the other. (371 U.S. at 172) (Emphasis added.)

The Court clearly established that the Commission must act "with a discriminating awareness of the consequences of its action" (Id. at 176) on other agencies so as not to contravene federal policies which have been entrusted to those agencies to promote.

C. It is National Energy Policy to reduce the use of oil and natural gas and to promote adequate and reliable supplies of energy to consumers at the lowest reasonable cost.

Mr. Alm indicates in his Verified Statement that despite the oil embargo of 1973 and 1974, the United States has continued to import nearly one-half of its current consumption of oil because domestic oil and gas supplies cannot meet domestic demand. Without corrective action American demand for oil will only increase in the future. Furthermore, continued national reliance on imported oil supplies has affected national economic options. Because of our inability to provide sufficient supplies of oil and gas from domestic resources, we have made ourselves vulnerable to the possibility of oil supply interruptions and precipitously rising oil prices.

Dependence on imported petroleum has been an issue of national significance for many years. From the issuance of Presidential Proclamation 3279 10/ in 1959 initiating the Mandatory Oil Import Program until the present, the United States has recognized its dependence on imported petroleum as a problem. This problem has become particularly acute in recent years as a foreign cartel has developed, curtailed supplies for a period of time and sharply raised the price of petroleum.

10/ Proclamation 3279, 24 F.R. 1781, March 12, 1959.

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Congress has responded with legislation to combat what is now recognized as a long term economic and fuel supply dilemma created by an overreliance on imported petroleum and by dwindling reserves of oil and natural gas. Important statutes which have been designed to reduce reliance on oil and gas wherever possible and appropriate include the Emergency Petroleum Allocation Act of 1973 (Pub.L. 93-511, 88 Stat. 1608), the Federal Nonnuclear Energy Research and Development Act of 1974 (Pub.L. 93-577, 88 Stat. 1878), the Energy Reorganization Act of 1974 (Pub.L. 93-438, 88 Stat. 1233), the Energy Supply and Environmental Coordination Act of 1974 (Pub.L. 93-319, 88 Stat. 246), the Energy Policy and Conservation Act (Pub.L. 94-163, 89 Stat. 871), and the Energy Conservation and Production Act (Pub.L. 94-385, 90 Stat. 1125). Pending in Congress, of course, is the National Energy Act.

The latest congressional action which recognizes the existence of the nation's energy dilemma is embodied in the statute establishing the Department of Energy. 11/ This statute united into one executive agency those functions which had been entrusted primarily to the Federal Energy Administration and the Energy Research and Development Administration. This legislative action was premised on

11/ Department of Energy Organization Act, P.L. 95-91, Aug. 4, 1977, 91 Stat. 565.

findings that the "energy shortage and our increasing dependence on foreign energy supplies present a serious threat to the national security of the United States and to the health, safety and welfare of its citizens" and that "a strong national energy program is needed to meet the present and future energy needs of the Nation consistent with overall national economic ... goals". (Pub.L. 95-91, Section 101). In Section 102(9) of the statute, Congress mandated the formation of a Federal agency to "promote the interests of consumers through the provision of an adequate and reliable supply of energy at the lowest reasonable cost". (Pub.L. 95-91, Section 102(9)).

D. In determining just and reasonable railroad tariffs, the ICC must consider the impact of its decisions on the attainment of National Energy Policy.

The Commission has demonstrated a growing awareness of national energy policies in decisions which have followed enactment of the Railroad Revitalization and Regulatory Reform Act of 1976 (Pub.L 94-210, 90 Stat. 31)(hereinafter "4-R Act"). Following the approach required by the Supreme Court in Burlington Truck Lines, Inc. v. U.S., supra, the Commission has considered the effect of its their decisions on the attainment of National Energy Policy.

At issue in Initial Decision No. 36307, Radioactive Materials, Missouri-Kansas-Texas Railroad Company (served November 11, 1977) was whether the respondent railroads could be compelled to transport radioactive materials and containers used for shipping such materials. The railroads alleged that radioactive material was such a highly dangerous commodity that it could not be transported safely by rail.

The conflict of policy objectives presented in Radioactive materials is obvious. On one hand, the national transportation policy requires the promotion of safe transportation services; on the other hand, national energy policy as it was expressed by Congress in the Energy Reorganization Act favored the development of nuclear energy. To allow the railroads to refuse to transport radioactive materials and the containers used to ship radioactive materials would ensure that railroads carrying such commodities would not become involved in a catastrophic nuclear accident. In effect, however, such an order also would eliminate the development of nuclear facilities. The order permanently would retard the development of nuclear energy as an alternative power source for the Nation.

The Commission issued an order favoring the protestants. Noting that the Nation is becoming increasingly more dependent on nuclear energy, the Commission found that:

> respondent's refusal to publish and maintain reasonable and otherwise lawful tariff provisions covering the transportation of the involved commodities will seriously hamper attainment of the described energy goals for the nation and be damaging to both the urgent energy needs and the national defense. (Initial Decision No. 36307,. Nov. 11, 1977, pg. 20.)

The Commission has adopted the statement of facts as set forth in the Initial Decision and set forth final conclusions which differed from the Initial Decision only in respects which are not relevant here.[12/]

In sum, then, the Commission has established a pattern of railroad tariff decisions where it has considered goals embodied in other federal policies as well as those embodied in the National Transportation Policy in determining whether a railroad tariff was just and reasonable. In Baltimore & O. R. Co., supra, the Commission considered national transportation policy goals and national agricultural objectives and decided on a course of action which did

12/ In Initial Decision No. 36325, Radioactive Materials, Special Train Service, Nationwide (served August 24, 1977), the Commission was confronted with the railroads' recommendation to make special freight train service mandatory for the carriage of spent nuclear fuel and radioactive waste. Protestants objected to the railroads' recommendation because it would require the shippers to accept and pay a premium for a type of service which they considered to be unnecessary, wasteful and harmful. Again, the Administrative Law Judge found in favor of the protestants, after considering the effect of the special train service on the cost of electricity generated by nuclear energy.

By order served March 13, 1978, the ICC adopted the statement of facts presented by the Administrative Law Judge and affirmed the holding as set forth in the Initial Decision.

not compromise the former but favored the latter because of the effect of its decision on the public interest. In Burlington Truck Line Co., Inc. v. U.S., supra, the Commission failed to balance national transportation policy goals with national labor policy goals and the case was remanded by the U.S. Supreme Court with the admonition that the decision of the Commission must accommodate the policies of the National Labor Act. Lastly, in a series of decisions concerning the transportation of radioactive materials, where national transportation policy goals conflicted with national energy objectives, the Commission found the weight of public interest to rest with the latter and affirmed decisions which ordered the rail transport of radioactive waste and containers used to ship radioactive waste. By considering broader criteria than national transportation policy goals, the Commission has continued its practice of acting as the guardian of the public interest in transportation matters.

Section II of this Argument describes the nature of the adverse impact that Commission regulation of western coal tariffs can have on National Energy Policy. Sections III and IV demonstrate how the Commission can mitigate these impacts in rate proceedings and by accepting for filing rates which embody agreement between carrier and shipper. DOE believes that the Commission should adopt these recommendations as a way of continuing its practice, as required

by court decision and reflected in its recent cases, of meaningfully considering a range of national policies in addition to National Transportation Policy.

II. Higher Tariffs For The Transport Of Western Coal In Market Dominant Situations Can Have An Adverse Impact On The Implementation Of National Energy Policy.

Higher coal tariffs can affect the implementation of National Energy Policy in several ways. First, higher coal tariffs can reduce the use by electric utilities of coal-fired generating units in the dispatch of power, thereby reducing the use of coal by the shipper. Second, higher coal tariffs, if they allocate the economic savings serving as the basis of coal conversion mainly to the carrier and not to the shipper and consumer run counter to the policy to provide energy supplies to consumers at the lowest reasonable cost. Third, higher coal tariffs can have a pervasive chilling effect on decisions by utilities and industry to replace existing oil and gas-fired capacity with coal-fired capacity.

A. Higher coal tariffs can reduce the use of coal by utilities by affecting the dispatch of generating units.

As DOE demonstrated in Docket No. 36180 (movement of coal to the City of San Antonio), fuel burning by existing utility capacity is sensitive to tariff levels through the effect of tariffs on relative generating unit operating costs. Most electric utilities dispatch their generating units as a function of marginal operating costs; the unit with the lowest operating cost for the next increment in demand is dispatched to meet that demand. Thus, as coal

transport tariffs are raised, the system will tend to use less and less coal in order to minimize costs. (See Dr. Rosenzweig's Verified Statement.)

The degree to which dispatch is affected by higher tariffs depends on many variables including, of course, the amount of the tariff increase and the array of units available to the utility. In Docket No. 36180 DOE witness Haines showed that the effect on system dispatch caused by higher coal tariffs could be quite dramatic. Dr. Rosenzweig's Verified Statement in this proceeding indicates the extent of the effect of higher tariffs on the fuel burn of the Houston Lighting and Power system (HL&P). Dr. Rosenzweig calculated that HL&P would burn approximately 2800 more barrels of oil equivalent in oil and gas per day between now and 1985 under a tariff approximately 160% of the Minimum Viable Tariff calculated by Mr. Bardwell for the movement of coal from Wyoming to Texas. (See Mr. Bardwell's Verified Statement sponsored by DOE in this proceeding.)

The significance of these findings to the Commission is that even though a utility may have designed and constructed a powerplant to be capable of burning coal, the plant may end up burning considerably less coal than anticipated, if the utility system is allowed to dispatch in order to minimize costs. DOE is concerned that this reduced use of coal will be compounded by the incremental effect of successive rate increases on system dispatch.

Some may have the impression that DOE itself possesses the authority to require an existing plant to burn as much coal as is physically possible once coal burning capability is constructed. Such is not the case in some situations. Under the Energy Supply and Environmental Coordination Act of 1974, as amended, 15 U.S.C. 791, et seq., ("ESECA"), the Secretary of DOE is required to prohibit the burning of oil and gas as its primary energy source by any powerplant if he can make certain findings. Two such findings, relevant here, are:

1. - that such powerplant or installation on June 22, 1974, or thereafter, acquires or is designed with the capability and necessary plant equipment to burn coal; and

2. - that burning of coal by such plant or installation is practicable and consistent with the purposes of ESECA. (15 U.S.C. 792.)

First, this authority does not allow DOE to prevent a utility from reducing the utilization of a coal plant and greatly increasing the use of oil or gas-fired plants without coal burning capability, an occurence which could result from higher coal tariffs. Second, even in those instances in which oil or gas and coal burning capability are found in the same plant or installation, the Secretary may not exercise his authority unless coal burning would be "practicable". DOE's regulations have interpreted this requirement as follows:

> (1) The determination of the "practicability" of a prohibition shall include an analysis of the reasonableness of additional costs associated with burning coal, including but not limited to, fuel costs, costs of equipment for coal burning, the costs of complying with the requirements of the Clean Air Act, and the costs of complying with other applicable environmental protection requirements; as well as the financial capabilities of the powerplant owner ...." 10 C.F.R. 305.3(b)(2)(i) (emphasis added.)

Thus, fuel costs enter into a determination of practicability under 10 C.F.R. 305.31(b)(2)(i). And, because transport tariffs for western low BTU coal hauled over long distances are a significant component of fuel costs, this Commission's tariff decisions could affect DOE's ability to effectuate its prohibition authorities under Section 2 of ESECA.

B. Higher coal tariffs can impose unreasonable costs on consumers of electricity.

The price of electricity in the United States has skyrocketed over the last five years. The causes of this price rise are many. An analysis of them is beyond the scope of this Statement. The call for lifeline rates and other initiatives to help consumers pay their electric bills leave no doubt, however, as to the effect of this price rise on consumers.

Conversion to coal offers the potential of at least slowing down the rate of increase in the cost and, thus, price of electricity to consumers. If operating cost savings were not anticipated, utilities would not plan to build new coal-fired capacity in order to replace existing oil and gas-fired boilers, as the next subsection of this

Argument sets forth in greater detail. In fact, what drives the decision to replace capacity is the expectation of substantially lower operating costs associated with coal or other alternate fuel fired facilities. The bulk of operating cost savings --those stemming from reduced fuel costs -- would, under most State public utility regulation, be passed on to consumers of electricity by virtue of fuel adjustment clauses. Thus, the consumer of electricity stands to benefit from replacement of oil and gas-fired facilities by those fired by coal.

The Commission has been urged in past proceedings to saddle western coal movements with a disproportionate amount of fixed railroad costs in view of an assumed inelasticity of demand for coal by an electric utility which has already built coal burning capacity. Not only may imposition of a disproportionate share of fixed cost result in the fuel use displacement impacts alluded to above, but it also has the effect of converting savings associated with coal conversion, which would otherwise flow through to consumers, to profit for the railroad.

In his Verified Statement, Dr. Rosenzweig demonstrates the magnitude of potential impact on consumers of electricity in the hands of the Commission. He calculated the financial impact on consumers of electricity of a difference in tariffs between the floor, or Minimum Viable Tariff, and the rate recently approved for the movement of coal to HL&P's W.A. Parrish plant. (The MVT for this movement, as established in the Statement of Mr. Bardwell, is $9.90.) At the approved

over the next eight years (in 1978 dollars) more for their electricity than if the Mininum Viable tariff had been prescribed for this movement.

DOE submits that transfer of all or most of the savings from consumers to railroads runs counter to the policy of providing energy supplies at the lowest reasonable cost to consumers, policy established in the DOE Organization Act as well as in Mr. Alm's Verified Statement. To transfer the great bulk of savings attained by coal conversion to the railroad would be to implement one national policy--to assure adequate revenues for railroads--at the expense of another equally important national policy. DOE acknowledges that some of the savings inherent in conversion may appropriately flow to the carrier, but that transfer of most or all of them to the carrier by operation of a rail tariff is an indication that the Commission is ignoring National Energy Policy.

C. Higher coal tariffs can have a pervasive chilling effect on capacity replacement decisions.

The greatest potential source of national benefits from coal conversion is found in replacement of existing oil and gas-fired capacity by plants and installations fired by coal. As this Argument indicates, below, the Commission's actions in current and future western coal transport proceedings could have considerable impact on utility and industrial capacity replacement.

An enterprise considering the replacement of oil or gas-fired boiler capacity will consider a number of factors, including:

- the life cycle cost of replacement compared to the cost of continued reliance on old plants;

- the regulatory framework within which fuel burning is likely to take place; and

- relative future fuels availability.

In the situation in which government regulation does not prevent the continuation of the use of existing oil or gas-fired plants and installations and in which at least oil promises to remain available for use under boilers in the foreseeable future, projected cost becomes the compelling factor in the consideration of replacement of existing oil and gas-fired capacity by coal-fired capacity.

Electric utilities and industrial facilities, like any enterprise, are in the business of minimizing the costs associated with the attainment of a given level of output. Many electric utilities and industries located in areas of the country that make them potential recipients of western coal by rail use significant quantities of oil and natural gas. These fuels have become considerably more expensive since the OPEC oil embargo, with the result that, quite apart from pressure exerted by governmental regulations or expected fuels availability, utilities and industrial firms alike have a strong economic incentive to look for cheaper alternative fuels to fire their boilers. Thus, utilities

and industry are considering additional replacement of existing oil and gas-fired capacity with capacity fired by western coal.

There are, of course, two major kinds of costs associated with the use of steam capacity: capital and operating costs. Any decision to replace existing capacity with coal-fired capacity must rest on a careful comparison of the net present values of the streams of benefits and costs associated with each option, that is, reliance on existing capacity or replacement thereof. The key criterion in determing whether to replace capacity is whether the savings in operating costs occasioned by the use of new capacity would outweigh the capital costs associated therewith. If operating cost savings outweigh capital costs, replacement is economically appropriate. Thus, an economic decision to replace existing capacity with new capacity fired by coal depends on the projected operating cost savings associated with new capacity. (See Mr. Borlick's Verified Statement.) These operating cost savings come primarily from one source: lower fuel costs.

As Mr. Borlick's Statement indicates, transport cost associated with the movement of western coal, often over very long distances, is a very significant component of delivered fuel costs. For example, a tariff for the movement

of coal from Cordero, Wyoming, to the HL&P plant at Fort Bend County, Texas, at the level of that proposed by Burlington Northern is almost two-thirds of delivered fuel costs. It is no wonder, as is illustrated in witnesses' Borlick and Rosensweig's Statements, that industrial and utility capacity replacement decisions could be significantly affected by the tariffs at which coal is transported.

Because of the long lead time associated with replacement of oil and gas capacity, utilities and industry alike must make decisions to replace capacity with coal-fired capacity as much as eight or more years in advance of that time at which the capacity is planned to be available. If utilities and industry perceive that this Commission's policy regarding coal transport tariffs is to prescribe tariffs effectively awarding the railroads with the savings available from conversion, the Commission will destroy the economic incentive to replace existing capacity. Utilities and industry will rely for a considerably longer time on their existing oil and gas-fired capacity. This would be entirely inconsistent with National Energy Policy. 13/

13/ Some may have the impression that DOE can exercise control over capacity replacement decisions by virtue of the use of its "construction order" authority under section 2(c) of ESECA. Under Section 2(c) DOE may request that a new plant or installation in the "early planning process" be designed and constructed to be capable of burning coal.

(footnote continued)

Dr. Rosenzweig's Statement indicates that the major impact of higher coal tariffs on utility fuel use is a function of the impact of such tariffs on capacity replacement decisions. Dr. Rosenzweig's study reveals that, at a tariff equal to approximately 160% of the minimum viable tariff calculated for the run from Wyoming to Texas, HL&P would be advised to construct at least one less coal-fired generating unit through the year 2000, under either of the oil price assumptions. The results of Dr. Rosenzweig's study can be best understood by seeing the impact of a substantial tariff hike on the HL&P system in terms of creating strong economic incentives to defer at least one large (570MW) coal unit from 1986 through the end of the century. Deferral of such replacement capacity would mean continued reliance on existing oil and gas capacity.

13/(footnote continued)

However, DOE has no authority to require a utility or firm to build a new plant or installation, but only to require that if such entity has determined to build new capacity, (and, thus, is in the "early planning process") that such capacity be capable of burning coal. Whether a utility or company determines to replace existing oil or gas-fired capacity and enter into an "early planning process" for a new plant or installation is determined by the utility or company as a function of the economics of replacement. Thus, whether DOE has the opportunity to exercise its construction order authority under subsection 2(c) of ESECA will depend in part on the levels of coal transport tariffs which the Commission permits in present and future western coal movement cases.

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While DOE has made no detailed analysis of the likely national impact of higher tariffs on capacity replacement, DOE would note that considerable oil and gas-fired utility capacity exists in the Southwest. Whether this capacity is replaced in the foreseeable future by coal-fired units may well depend on the tariffs approved by the Commission in current and future proceedings.

III. Tariffs For Individual Movements Of Western Coal In Situations Of Market Dominance Should Be Established Only After Consideration Of The Incremental Costs Associated With Such Movement, The Effect Of The Rates On The Implementation Of National Energy Policy, The Need To Guard Against The Exaction Of Unreasonable Monopoly Profits And The Amount Above Incremental Costs Necessary To Make A Suitable Contribution To The Financial Health Of The Railroad.

In this section of the Argument, DOE sets forth some considerations which should enter into Commission deliberations regarding tariffs for the movement of western coal in market dominant situations. DOE believes that, if the Commission implements DOE's suggestions, rates for the movement of western coal in market dominant situations can be established in a manner consistent with both National Energy and National Transportation Policy.

A. A "Minimum Viable Tariff" (MVT) based on the incremental costs of a movement of western coal in market dominant situations should serve as the floor of the zone of reasonable rates for such movement.

A tariff for a particular movement of coal which would recoup for the carrier solely those incremental costs associated with such movement is the appropriate floor to the zone of reasonable rates for the movement. Any investment opportunity (or tariff) in which the incremental revenues exceed incremental costs will make a contribution (the difference between incremental revenues and incremental costs) to covering fixed expenses. In other words, such

investment or rate will make a contribution to the going concern value of a firm. By the same logic, an investment (or tariff) in which incremental costs exceed incremental revenues would increase the burden of expenses which must then be offset by other activities and would reduce the going concern value of the firm. Finally, an investment (or tariff) in which incremental revenues equal incremental costs would neither reduce nor make a contribution to the going concern value of the railroad. (See Mr. Borlick's Verified Statement.)

Establishment of a tariff which would recoup less than the incremental cost of a rail movement would be the same as forcing the railroad to undertake a movement with full knowledge that its return on such movement will be non-compensatory, thereby reducing the railroad's going concern value. Such a result would clearly be inconsistent with the intent of Congress as reflected in the 4-R Act.

DOE's recommended minimum viable tariff (MVT) would permit recovery of all incremental costs associated with a specific coal movement. That MVT would be the appropriate floor of the zone of reasonable rates. The calculation of an MVT entails an unconventional use of Rail Form A. The Verified Statements of witnesses Bardwell and Williams discuss in detail the methodology used to calculate the MVTs for the western coal movement which serves as the basis of Dr. Rosenzweig's case study.

It will be seen that the use of Rail Form A to calculate tariffs based on fully allocated costs in traditional rate proceedings at the Commission has been altered in a number of ways. Principal among the alterations is the removal from Rail Form A costs of fixed overhead costs not associated with the movement for which the MVT is calculated. Rail Form A, then, is used solely to assist in the calculation of variable operating costs directly traceable to a movement. A second alteration from traditional ratemaking is the separate calculation of incremental capital costs associated with the two movements. In the calculation of capital costs, the incremental cost of locomotives and cabooses is used instead of an average cost of such equipment experienced by the respective railroads. Thus, if a new locomotive costs $625,000, each locomotive purchased as a result of the movement would be priced at this amount regardless of the fact that the average locomotive in service at present might have cost the railroad something less. Lastly, the MVT includes an amount to cover the current market cost of capital used to effect the incremental movements. Failure to include the current market cost of capital in the MVT would result in reduction of the going concern value of the railroad.

B. In prescribing tariffs for the movement of western coal in market dominant situations, the Commission should consider the need to assist railroads in the attainment of adequate revenue levels, the impact of rates on National Energy Policy and the need to guard against the exaction of unreasonable monopoly profits.

1. The 4-R Act establishes a policy in favor of the establishment of adequate revenue levels for railroads in order to provide for a sound national transportation system.

It was the intent of Congress in the 4-R Act to require the Commission to act to establish adequate railroad revenue levels in order to provide for a sound national transportation system.

DOE would note that the Commission determined in Ex Parte No. 338, that:

> ...there is a need to encourage individual rate adjustments, as opposed to general rate increases, and that revenue adequacy should be a consideration in individual rate proceedings. (Report of the Commission in Ex Parte No. 338, p. 17, Feb. 3, 1978.)

DOE acknowledges that revenue adequacy is a relevant concern of the Commission in those proceedings in which rates are established for new movements of western coal in market dominant situations. A tariff for such a movement set at the MVT to cover solely incremental costs would not provide adequate revenues to the railroad to allow them to attract and retain capital. Thus, the 4-R Act would appear to require more than the establishment of rates set at the MVT level.

2. The Commission must factor likely impacts on National Energy Policy into its decisions regarding tariffs for the movement of western coal in market dominant situations.

Section I of this Argument established that this Commission must consider National Energy Policy in the exercise of its rate setting authority under the Interstate Commerce Act. Section II indicated the nature of the potential impact of Commission rate regulation on National Energy Policy.

In order to mitigate this adverse impact, the Commission, as a first step, should be aware of the obvious potential effect its tariff decisions can have on utility and industrial decisions regarding replacement of existing oil and gas capacity by coal-fired capacity. The Commission should avoid sending the wrong signal to utilities and industrial firms planning their replacement capacity. Tariffs should not be prescribed which result in the transfer of savings from projected capacity replacement mostly or wholly to the carrier. An announced Commission determination to refuse to permit conversion savings to be transferred from a utility shipper to the carrier would also be consistent with provision of energy supplies to consumers at the lowest reasonable cost.

Second, the Commission should always be aware of the potential effect of a tariff on the economy dispatch of a utility system. In order to ascertain this effect in individual proceedings the Commission could require shippers to file evidence indicating the potential extent of such effect.

3. The existence of market dominance requires the Commission to exercise its authority to protect the shippers and consumers from the exaction of unreasonable monopoly profits.

Undoubtedly, the 4-R Act directs the Commission to treat situations of market dominance very differently than situations in which competition for transport exists. Section 202(b) amends section 1(5) of the Interstate Commerce Act to read, inter alia:

> Notwithstanding any other provision of this part, no rate shall be found to be unjust or unreasonable, or not shown to be just and reasonable, on the ground that such rate exceeds a just or reasonable maximum for the service rendered or to be rendered, unless the Commission has first found that the proponent carrier has market dominance over such service. A finding that a carrier has market dominance over a service shall not create a presumption that the rate or rates for such service exceed a just and reasonable maximum.

Where there is no market dominance, a proposed rate may not be adjudged unjust or unreasonable simply by virtue of showing that it exceeds a maximum reasonable rate established for a movement. However, when market dominance has been found, no presumption attaches that a proposed rate exceeds

a just and reasonable maximum. Thus, when market dominance has been found to occur with respect to a movement, the Commission must exercise the full rate review authority established for it by the Interstate Commerce Act.

DOE would encourage full review of rates in market dominant situations. Failure to conduct such review would permit railroads to establish rates ensuring excessive monopoly profits well beyond what is necessary to provide the railroad with "adequate revenue levels". 14/ The tendency to do this might be expected to be particularly strong in view of the recent defeat by the U.S. House of Representatives of the bill to permit the Secretary of the Interior to use powers of eminent domain to facilitate the construction of coal slurry pipelines.

14/ Thus, DOE agrees strongly with the Commission when it said:

> Nevertheless it is clear Congress did not intend for our mandate to be simply one of promoting railroad revenues. Consideration of shipper and public interests requires that revenue adequacy be taken not only as a goal but also as a limitation. In other words, to the extent possible, we are to assist the railroads in attaining revenue adequacy, and to protect the public from having to provide revenues that exceed an adequate level. (Report of the Commission in Ex Parte No. 338, pp. 7-8, Feb. 3, 1978.)

4. The Commission should consider the rate of return on the incremental costs associated with the establishment of tariffs for the movement of western coal in market dominant situations.

The Commission should consider the rate of return on incremental investment entailed by the establishment of any rate for a new movement of western coal in market dominant situations. First, consideration of the rate of return is a useful way to ascertain whether a carrier has proposed a rate which includes monopoly profit at the expense of the shipper and consumers as a result of its market dominant position. A rate of return on a coal movement above that which firms typically earn in the competitive marketplace would suggest the use of a market dominant position to exact monopoly profits.

Second, however, calculation of the rate of return for an incremental movement implicit in alternative tariffs would give the Commission a tool to factor revenue adequacy considerations into individual rate cases. DOE acknowledges that western coal movements should contribute to the establishment of adequate railroad revenue levels in order to assure a sound national transportation system. Thus, it may be necessary under certain circumstances to approve a tariff for a movement which appeared to permit a measured amount of monopoly profits for a railroad on such movement. DOE believes that approval of such a tariff should occur only in cases in which the Commission had determined that the railroad in question had revenue adequacy difficulties.

Thus, consideration of the rate of return on incremental investment is a useful method by which the Commission can mediate between two contradictory aims of railroad regulation in market dominant situations, that is, between the need to assure that the shipper and consumers are not being required to furnish the carrier with monopoly profits and the need to set tariffs which permit individual western coal movements to contribute to the establishment of a sound national transportation system.

DOE knows of no precise formula by which to balance energy considerations, monopoly regulation and the need to establish adequate revenue levels for railroads in individual cases. The Commission will have to balance these precepts in light of the applicable MVTs and rate of return thereon entailed by the amount of the proposed tariff above the MVT. DOE notes, however, that, as the following section indicates, acceptance for filing of contract rates would likely obviate the need of the Commission to address these issues in many cases.

IV. The ICC Should Encourage The Negotiation Of Contract Rates Between Electric Utilities And Industry And Railroad Carriers And Should Accept Such Contract Rates For Filing.

DOE urges the Commission to encourage the negotiation of contract rates between electric utilities and industry and rail carriers and to accept such contract rates for filing. If such agreements are legally binding on both the carriers and the shippers, then both contracting parties will be able to predict coal tariffs for the duration of the contract; and that predictability will encourage capital investments by both parties. 15/ Increased predictability capital investment will facilitate the implementation of National Energy Policy.

A. Contract rates must be legally binding on both contracting parties.

Those national energy policies which seek to increase utilization of coal by electric utilities and industry are dependent upon a readily accessible supply of coal and a reliable transportation system which can relocate the coal from the mine to the shipper. If those two conditions can be satisfied, then persuading utilities and industry to

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15/ To the extent that contract rates stimulate capital investments in rail-related assets, then such agreements serve the same purposes which capital incentive rates were designed to promote. Both contract rates and capital incentive rates would encourage major capital investments in rail facilities in order to insure an efficiency in rail service which would be advantageous to both shipper and carrier. Thus, improvements of rail facilities by virtue of contract or incentive rates allow railroad carriers to provide improved and expanded transportation services.

convert from oil and gas-fired boilers to coal-fired boilers will depend on whether coal conversion is practical and economical. In this situation, practicality means the ability to contract with the coal operator in order to insure that a specific quantity of coal at a given price over a given span of time will be available. Contracting with coal suppliers has presented few problems for electric utilities and industry. However, contracting with railroad carriers to insure transportation services heretofore has been impossible.

As a consequence, those firms which should logically consider converting to coal-fired boilers might not pursue the option. Absent those commitments and without the ability to weigh the present and future cost of coal in any management decision, coal conversion would defy reasonable scrutiny and evaluation. However, if utilities and industry could contract with rail carriers and could establish a tariff for the transport of coal which was mutually binding on both contracting parties for the duration of time specified in the agreement, utilities and industry could evaluate the practicality and the economics of converting oil and gas-fired boilers to coal-fired boilers.

Contract rates should be negotiated freely and at arm's length by utility and industry shippers and railroad

carriers. The contract should be in writing and must contain only such terms and conditions as are necessary to make it a legally binding instrument. If utilities and industry and the railroads are given as much flexibility as possible, DOE believes that they will engage in innovative ratemaking contracts which will prove to be beneficial to all concerned.

DOE would expect, however, that any contract rate would specify not only the present price for the transport of a given quantity of coal but also a formula mutually acceptable to both contracting parties which would allow the railroad's tariff to increase as its costs in transporting the coal increase. The Commission should review not only the present tariff but also the adequacy of that formula for adjusting future tariffs in order to insure that all tariffs contribute to the going concern value of the carrier and are consistent with Commission regulations and guidelines concerning adequate revenue levels (49 U.S.C. §15a(4)). 16/ Lastly, because contract rates would be legally binding for the duration of the parties' agreement, the Commission should

16/ Although a contract rate may satisfy the statutory standards set forth in he 4-R Act, that rate, nonetheless, may have been negotiated in disregard of the consumers' interests. Electric utilities may not adequately protect the interest of consumers in the availability of electricity at the lowest reasonable cost because of the ability of utilities to pass on fuel cost increases to customers by operation of fuel adjustment clauses. Therefore, the consumers' right to challenge the contract rate in accordance with established ICC procedures should be protected and maintained.

set the rates aside during the contract period only for the most compelling of reasons. 17/

B. Contract rates which are legally binding on the contract signatories can be beneficial to both contracting parties.

The process of negotiating a legally binding tariff should afford each party an opportunity to understand the financial situation of the other party. Negotiations allow the shippers an opportunity to explain to the carrier the economic restraints of a coal-conversion program. Similarly, the rail carriers are permitted an opportunity to explain the costs involved in providing the subject transportation service. Once each party has a more precise understanding of the financial situation of the other party, there are increased chances that a tariff which is acceptable to both parties can be designed. The negotiation process involved in designing a contract rate may provide the necessary bargaining forum in which both parties can agree on a tariff which makes a coal conversion program economically feasible for electric utilities and industry and which makes the transport of coal from the mine to the shipper a lucrative transportation service for the rail carrier.

17/ Foregoing scrutiny of contract rates for the duration of the contract would be similar to the Commission's inability to set aside capital incentive rates under Sections 1, 2, 3 or 4 of the IC Act for the statutory 5-year period.

Once the shipper and the carrier are in agreement on the duration of the contract rate, the present tariff for transporting coal and the formula by which additional future carrier costs will be reflected in any future tariff, then further benefits of a legally binding contract rate may be reaped. Contract rates would allow the rail carrier to seek all economic advantages which attach to large volume movements over an extended and certain period of time. Presumably, such advantages should permit the carrier to reduce costs incurred in providing the service and thus to reduce in part the inflationary trend of transportation costs generally.

Furthermore, because the quantities of coal which are shipped by utilities and industry are stable throughout the year and do not fluctuate with the season, the railroad can make long term decisions on the most advantageous use of capital assets and personnel. Maintenance decisions also should be facilitated because the carrier will know what level of service will be required over the duration of the contract, and because the revenues to be generated by the tariff would be reasonably predictable, the rail carriers would be able to schedule all necessary maintenance accordingly.

The advantages afforded by contract rates to electric utilities and industry would not be dissimilar to those

provided to rail carriers. Once the electric utility or industry can be certain of the supply and cost of coal and the transportation services necessary to move the coal from the mine to the coal-burning facility, then the utility or industry can proceed with reasonable assurance that the investment necessary to convert oil and gas-fired boilers to coal-fired boilers should involve only a manageable risk. Accurate cost projections become more feasible. Savings from conversion can be estimated with the assurance that they will be allocated between carrier and shipper predictably, not inadvertently by the Commission, after the plant or installation is constructed. Furthermore, those utilities and industries now contemplating capacity replacement can procede to develop conversion plans in the knowledge that, if they come to terms with the carrier, the Commission will not later prescribe a tariff effectively eliminating conversion savings. This assurance should enable the Commission to avoid imposing a pervasive chilling effect on the capacity replacement in regions of the country containing potential users of western coal. Thus, contract rates would serve to further national objectives in moving electric utilities and industry from an excessive reliance on oil and natural gas to utilization of domestic coal reserves.

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V. CONCLUSION

The Commission should adopt the following guidelines for proceedings regarding tariffs for the movement of western coal in market dominant situations:

1. The impact of rates for such movements on the implementation of National Energy Policy shall be measured and evaluated in each such proceeding;

2. The floor of the zone of reasonable rates for any such movement shall not be less than a Minimum Viable Tariff which permits only the recoupment of the incremental costs directly related to the specific movement;

3. In setting tariffs which exceed a Minimum Viable Tariff, there shall be considered:

(a) the impact of such tariffs on the implementation of National Energy Policy (including the impact of tariff levels (i) on the allocation of the economic savings deriveable from conversion from oil and natural gas to coal; and (ii) on fuel burning by existing utility plant resulting from impact on the utility's dispatch of units);

(b) the need to establish adequate revenue levels for the railroad; and,

(c) the need to protect the shipper and the public from the exaction of monopoly profits.

In addition the Commission should determine to accept for filing contract rates in view of the clear benefits associated therewith.

Respectfully submitted,

LYNN R. COLEMAN
General Counsel

GAYNELL C. METHVIN
Associate General Counsel

BRUCE C. DRIVER
Acting Deputy Assistant General
Counsel

MARJORIE ROSENTHAL BLOOM
Attorney-Advisor

VERIFIED STATEMENT OF ALVIN L. ALM

Q. Please state your name and business address.

A. My name is Alvin L. Alm. My business address is 1000 Independence Avenue, S.W., Forrestal Building, Room 7A-159, Washington, D.C. 20585.

Q. By whom are you employed and in what capacity?

A. I am the Assistant Secretary for Policy and Evaluation in the Department of Energy.

Q. What is your educational background?

A. I was graduated from the University of Denver in 1960 with a Bachelor of Science degree. I then attended Syracuse University where I received a Masters Degree in Public Administration in 1961.

Q. Please describe your past employment and professional experience.

A. I began working in the Federal Government as a management intern and contract administrator at the Atomic Energy Commission in 1961. From 1963 to 1970, I was a budget examiner for the Bureau of the Budget. In 1970, I left the Bureau and became a staff director for program development at the Council on Environmental Quality where my responsibilities included staff coordination of legislative and administrative initiatives. From 1973 until 1977, I was Assistant Administrator

for Planning and Management at the Environmental Protection Agency. Beginning in January, 1977, I served on the White House Energy Policy and Planning Staff where I participated in the development of the National Energy Plan and in other policy matters. With the formation of the Department of Energy in October, 1977, I was appointed to my present position.

Q. Would you describe the functions of your office in DOE?

A. When the Department of Energy was activated, the Office of Policy and Evaluation was assigned the following responsibilities which are relevant to this proceeding and my testimony:

To conduct assessments of the energy situation;

To develop, analyze and recommend policy initiatives;

To develop legislative proposals to support policy objectives;

To coordinate analytical and evaluation activities related to policy processes;

To conduct selected in-depth evaluations of DOE policies and programs;

To prepare and coordinate the National Energy Policy Plan.

Q. When you enunciate policy positions in your testimony, are you speaking on behalf of DOE?

A. Yes, I am.

Q. What is the subject of your testimony?

A. In my testimony I set forth some facts and considerations which have given rise to the development of national energy policy. In addition, I set forth two national energy policies which DOE believes are particularly relevant to the issues in this proceeding.

Q. Could you generally describe the energy considerations to which you refer?

A. Although there is currently a small and temporary excess of world oil productive capacity, the U.S. is still importing over 40 percent of its oil, far more than during the 1973-74 embargo. As world oil consumption approaches world oil production limits, it is likely that oil will become more expensive during the 1980's, unless the U.S. takes steps to influence the path of these price increases through its national energy policies. Any reduction in the demand for OPEC exports not only displaces expensive imported oil, but also reduces pressures in the future for price increases. Such reductions could yield multi-billion dollar

savings in foreign energy payments and thus represent a major contribution to the economic health and national security posture of the United States.

Consumption of oil at current levels has resulted in a number of economic difficulties. The large balance of payment deficits, the possibility of interruption of imports, and the possibility of precipitate price rises pose threats to the stability of economic growth.

Q. Do you expect oil consumption to continue to grow in the future?

A. Without corrective action to reduce reliance on oil, such as proposed in the National Energy Plan, U.S. demand for oil will continue to increase in the future -- to about 22 million barrels of oil per day in 1985.

Q. Are our domestic reserves of oil and natural gas sufficient to meet our domestic demands?

A. Our domestic oil and natural gas supplies cannot meet our national demand. Domestic oil reserves constitute only 3.7 percent of U.S. conventional energy reserves, but provide 27 percent of U.S. energy consumption in 1976.

Natural gas constitutes only 4 percent of domestic conventional energy reserves. In 1976, natural gas furnished 27.6 percent of U.S. energy consumption, the equivalent of 10 million barrels of oil per day. The ratio of reserve to production of oil in the lower 48 is 7.5 to 1, the lowest of any significant producing country.

Q. Do you expect significant new domestic discoveries of oil in the future?

A. Other major additions to domestic oil supply are unlikely. For more than 17 years, domestic oil discoveries have been outpaced by domestic consumption, except for the discovery of oil on the North Slope of Alaska. Today, U.S. proved reserves amount to less than 10 years of production at the current level.

Q. If our domestic reserves are insufficient to meet our domestic demand and if no significant discoveries are anticipated, how much oil will we have to continue to import?

A. In 1976, imports averaged 7.3 million barrels per day or 42 percent of U.S. oil consumption. Currently, oil imports are 8 million barrels per day. Increasing consumption of imported oil has led to deepening

dependence on the world oil market and growing vulnerability to a supply interruption. A substantial increase in imports will occur by 1985 unless demand is curbed. Although estimates vary widely, the most reasonable range of estimates of 1985 oil imports without the NEA is 9 to 12.5 million barrels per day.

Q. How important is coal in our present energy situation?

A. Coal constitutes 90 percent of U.S. conventional energy reserves, but currently supplies only 18 percent of our energy consumption. Under current conditions, increased coal use is frequently the most economic and efficient means to reduce reliance on oil and natural gas in particular situations.

Q. Would you briefly elaborate on National Energy Policy as it has developed in response to the energy considerations described in your testimony?

A. Several policies and programs have been developed in order to deal with the nation's overreliance on oil and gas. Two policies which have particular relevance for the Commission in this proceeding have found expression both in recent Acts of Congress and in policy pronouncements by this Administration. I refer to existing national policies in favor of converting to coal those oil and gas-fired boilers operated by

electric utilities and industry and promoting the interests of consumers through the provision of an adequate and reliable supply of energy at the lowest reasonable cost.

In 1974, President Ford signed into law the Energy Supply and Environmental Coordination Act of 1974 (Pub. L. 93-319, 88 Stat. 246) which mandates the institution of a coal conversion program for electric utilities and industry. The program is designed to reduce our dependence on oil and gas by shifting new and existing facilities to coal. A significant component of the National Energy Act, currently pending before Congress, is a strengthened coal conversion regulatory program. This component was passed, as amended by both Houses of Congress and the NEA Conference Committee, by the U.S. Senate in July, 1978.

The rapid increase in the price of energy to consumers has had substantial adverse impacts on many sectors of our society. National Energy Policy has been geared to keeping prices of energy down to reasonable levels and where higher costs are necessary to achieve energy

objectives, to assure that consumers share directly in the benefits of such higher prices. The most recent enunciation of this policy was made by Congress in the Department of Energy Organization Act (42 U.S.C. 7101 et. seq.) in which one of the purposes of the Act was declared to be "to promote the interests of consumers through the provision of an adequate and reliable supply of energy at the lowest reasonable cost." (Pub.L. 95-91, Section 102(9))

The application of this policy to particular regulatory situations demands considerable judgment and analysis. Nonetheless, this policy has relevance to this proceeding in two ways. First, in order to furnish supplies of energy including electricity to consumers at the lowest reasonable cost, transport tariffs for coal should be established at a level which is consistent with that goal. Furthermore, to insure that these coal supplies are adequate and reliable, railroads must be capable of hauling large quantities of coal, an objective consistent with the intent of Congress in the 4-R Act to insure that railroads earn adequate revenues.

Q. Would you elaborate on the relevance of these national energy policies to this proceeding?

A. The ultimate objective of this proceeding is to determine guidelines for the establishment of rates for the transport of western coal in market dominant situations. Consequently, the guidelines for determining railroad tariffs for the transport of western coal in situations of market dominance must balance energy goals with transportation goals. It is reasonable that maximum limits on railroad tariffs be placed at levels which are sufficiently high so that revenues generated from the carriage of coal contribute to the overall health of the railroad. However, tariffs should not be so high as to render the use of coal uneconomic in the long run when compared to the use of oil and gas. Electric utilities and industrial users of coal simply will be unlikely to convert to coal if the delivered price of coal makes it a more costly energy source than oil.

Situations may arise, however, where proposed tariffs may permit delivery of western coal at costs competitive with oil or gas but the price impact on consumers, including consumers of electricity, would be unreasonable. In those circumstances, the ICC must balance railroad revenue needs with the effect of higher rates on the ultimate consumer of coal products.

Secondly, many potential purchasers of coal such as electric utilities and petrochemical companies must make substantial, long-term financial commitments in plant and equipment in order to utilize coal. Such purchasers are concerned not only with current coal tariffs but also with future tariffs. If utilities and industries which otherwise would convert to coal-burning plants perceive a substantial likelihood that future tariffs for the movement of coal will be increased to levels which would render coal use uneconomic, conversion to coal will be discouraged, even if current tariffs are low. Potential coal users must have strong assurances that delivered coal prices will, for the foreseeable future, be at a level which will permit

economic operation of coal facilities. Ordinarily, utilities and industries would very linely seek to bind coal suppliers and railroad carriers with long term agreements before committing financial resources to the construction of coal-fired facilities. DOE urges the ICC to permit the filing of contract rates which reflect such long term agreements. Such contract rates after review and approval by the ICC would allow tariffs for hauling coal to be predictable. Any adjustments to the tariffs should be in accordance with a formula mutually agreeable to both contracting parties. DOE would urge that the ICC permit a presumption of reasonableness to attach to any such filed rate.

DOE does not oppose increases in coal rates in order to contribute to healthy railroads; however, such increases must be made with an understanding of their effect on national coal conversion objectives and on the consumer.

VERIFICATION

DISTRICT OF)
) SS
COLUMBIA)

ALVIN L. ALM, being duly sworn, deposes and says that he has read the foregoing statement, knows the facts asserted therein, and that the same are true as stated.

Alvin L. Alm
ALVIN L. ALM

Subscribed and sworn to
before me this 3rd day
of August 1978

Janice L. Hilligh
Notary Public

My Commission Expires Jan. 14, 1981

VERIFIED STATEMENT OF FACT

ROBERT L. BORLICK

Q. Please state your name and business address.

A. My name is Robert L. Borlick. My business address is 1111 20th Street, N. W., Vanguard Building, Room 538, Washington, D.C. 20461.

Q. By whom are you employed and in what capacity?

A. I am Chief of the Economic and Financial Analysis Branch, Division of Regulatory Proceedings, Office of Utility Systems, Economic Regulatory Administration, Department of Energy (DOE).

Q. What is your educational background?

A. I hold a Master of Business Administration degree from Stanford University where my study program emphasized economics, finance, quantitative analysis, and transportation policy. I also hold a Master of Science degree in Electricity Engineering from Ohio State University and a Bachelor of Science degree in the same field from the Illinois Institute of Technology.

While at Stanford University, I partially completed an interdisciplinary Ph. D. program within the Department of Engineering-Economics Systems. Also, on a part-time basis,

I completed course work in applied mathematics and economics at the Polytechnic Institute of Brooklyn and George Washington University. In 1977 I completed the Regulatory Studies Program sponsored by the National Association of Regulatory Utility Commissioners and Michigan State University.

Q. Please describe your past employment and professional experience.

A. After my graduation from the Illinois Institute of Technology, I entered the U.S. Navy and served on the Staff of VADM H.G. Rickover in the Navy Nuclear Power Program and also aboard the aircraft carrier USS ESSEX. As Electrical Officer of the USS ESSEX, I was responsible for the operation and maintenance of the ship's electric plant and equipment. As an Engineering Watch Officer, I also had operational responsibility for the Ship's Main Propulson Steam System, whose power output was approximately equivalent to that of a 100 MW generating plant.

After receiving my MS Degree from Ohio State University, I worked as an Operations Research Analyst for the Center for Naval Analyses, a government sponsored "think tank." I subsequently joined the Lockheed Missiles and Space Company in Sunnyvale, California, where I conducted economic analyses in both defense and non-defense areas.

Following my graduation from the Stanford Graduate School of Business, I took a position with the management consulting firm of Cresap, McCormick and Paget, Inc. During my three years there, I served a variety of public and private sector clients, the largest of which were: ARCO Oil Company, United Airlines, N.W. Ayer and the State of California, Department of Public Works.

In 1972 I joined the U.S. Environmental Protection Agency (EPA) where I was appointed Chief of the Strategic Planning Branch within the Office of Planning and Evaluation. In this position I was responsible for conducting and supervising studies of agency policy on various environmental issues in the areas of energy, transportation and land use.

In 1974, I moved to the newly created Federal Energy Administration (FEA) where I was appointed Chief of the Electric Power Analysis Division within the Office of Policy and Analysis. My Division provided the Agency with comprehensive data and analytical support in the areas of demand forecasting, supply reliability, utility financial requirements and the impacts of regulatory policies. My staff and I assisted in the development of the Interim Report on Electric Utility Rate Design Proposals, which FEA submitted to Congress in 1977 in accordance with the provisions of Section 203 of the Energy Conservation and Production Act of 1976.

Just prior to assuming my present position, I served as Acting Director of the Office of Energy Use Analysis, Energy Information Administration (EIA), Department of Energy. In this capacity, I assisted in the reorganization of the Office of Applied Analysis within the new Department and in the preparation of the 1977 EIA Annual Report to Congress.

Q. Would you please describe the function of the Division of Regulatory Proceedings?

A. The function of the Division of Regulatory Proceedings is to organize and implement an active program of interventions in a variety of regulatory proceedings before the Federal Energy Regulatory Commission, other federal regulatory agencies and State regulatory commissions for the purpose of advocating the implementation of National Energy Policy.

Q. As chief of the economic and financial analysis branch within the division of regulatory proceedings, what are your responsibilities?

A. In my present position I am responsible for the technical oversight of all economic and financial analyses conducted in support of the DOE intervention program and supervision of the development of related testimony. This includes studies done by outside contractors or other DOE offices as well as those performed by my own staff. Finally, I have supervisory responsibility for a staff of four professionals.

Q. What is the subject of DOE's analysis in Ex Parte No. 347?

A. I and my colleague, Dr. Rosenzweig, whose Verified Statement follows mine, conducted a case study to demonstrate the sensitivity of oil and natural gas consumption by electric utilities to western coal transport tariffs.

Q. Would you please describe briefly that study?

A. Yes. The case study focused on the Houston Lighting and Power Company (HL&P) and examined the economic advantage to replacing its existing oil and natural gas-fired generating capacity with new coal-fired capacity. The impacts of a high and a low coal transport tariff were estimated for forecasts both low and high of oil and natural gas prices.

Q. Would you please explain the basis for the coal tariff used in the case study?

A. Yes. The low tariff used in the study was set equal to the incremental costs imposed on the carrier by the Coal Movement. I refer to this tariff as the "Minimum Viable Tariff", or MVT. It s derivation is discussed in detail in Section III of this statement. The high tariff was set equal to that currently in effect for the movement of coal to the W.A. Parrish Plant in Fort Ben, Texas.

Q. Did you calculate the minimum viable tariff?

A. No, I did not. The tariff was calculated by witness Bardwell with the assistance of witness Williams, whose Verified Statements setting forth the calculations and underlying methodology follows witness Rosenzweig's Statement.

Q. Aren't the results of your studies sensitive to your assumptions regarding future oil and natural gas prices?

A. Very much so, since the economic impetus behind conversion is based on a comparison of operating cost savings obtained from a new coal-fired plant and the capital cost of that plant. These savings directly depend on the prices of oil and natural gas as well as the price of coal. For this reason two separate oil and natural gas price forecasts were employed in the case study. These price forecasts are described later in this statement.

Q. Would you please summarize the results of the case study?

A. Yes. Analysis of the HL&P system indicated that if the tariff in effect for coal delivered to the W. A. Parrish Plant were reduced to a figure in the neighborhood of the MVT, it would be economic for the utility to build one or two additional 570 MW coal-fired generating units solely for the purpose of displacing oil and

natural gas use. This directly translates into an average increase in oil and natural gas consumption equivalent to 14,000 to 27,000 BPD of residual oil during the period, 1986-2000. This range of impact reflects the differential effect of the low and high oil and natural gas price forecasts used in the analysis.

In addition to increasing oil and natural gas consumption, the effect of higher tariffs for western coal would be to increase the cost of electricity to HL&P customers by about 360 million dollars (in constant 1978 dollars) over the next eight years.

Although HL&P is one of the largest oil and natural gas-fired utilities in the Southwest, it will only account for only about 15% of that region's oil and natural gas-fired generating capacity in 1986, even if no new coal plants are constructed for coal conversion purposes.

Q. Would you summarize the contents of the remainder of your Verified Statement of Fact?

A. Section II is a brief discussion of the underlying economics of coal conversion. Finally, Section III sets forth the theory underlying the development of the minimum viable tariff and suggests some factors which the Commission should consider in establishing tariffs for western coal transport.

II. ECONOMICS OF COAL CONVERSION

Q. Would you define the term "coal conversion" as used in your Statement?

A. Yes. By "coal conversion," I mean the construction of new coal-fired boiler capacity to replace an equivalent amount of existing oil or natural gas-fired boiler capacity. The purpose of this replacement is to reduce the consumption of scarce, more expensive oil and natural gas. Coal conversion as used here does not mean prohibiting existing boilers that have a dual or multi-fuel capability from burning oil or natural gas.

Q. What is the basic condition which must exist to make coal conversion economic?

A. For coal conversion to be economic, the fuel cost advantage of running a new coal plant, over that of an existing oil or gas-fired plant of equal size, must exceed the capital carrying charges of the new plant. This is a common class of investment decisions which businessmen make everyday.

Q. What economic criterion is typically used to evaluat e such investment decisions?

A. Well managed firms calculate either the net present value (NPV) or the internal rate of return (IRR) of project alternatives and select the one offering the largest positive value. Both of these methods employ a discounted cash flow calculation which explicitly adjusts for the time value of money and for project risk.

Q. Is the coal conversion investment analysis applicable to an electric utility different from that applicable to an industrial firm?

A. Not conceptually. In both cases the fuel and other operating cost savings of a candidate conversion project are discounted on a cash basis and compared with the project's required capital investment; however, the electric utility analysis is computationally much more complex. Industrial boilers typically supply a relatively constant flow of steam throughout their economic lives; therefore, their fuel use is also relatively constant over time. In contrast, utility boiler utilization typically declines over its life. Therefore, its fuel use also declines over time.

Most utility systems today centrally dispatch their generating plants in a manner which minimizes the total system's operating cost of meeting the demand for electricity. This means that those plants which are most efficient and/or burn the cheapest fuels are operated most intensively, (i.e., in base load service) while plants which are more expensive to operate are assigned to intermittent use (i.e., cycling and peaking service). Typically, as power plants become older, their efficiency diminishes, operating costs rise and, thus, they tend to be operated less.

To analyze the attractiveness of utility coal-conversion, it is necessary to simulate the utility's total annual fuel usage by dispatching all of its power plants for a number of years following the completion of the new coal-fired plant. Only in this manner is it possible to accurately forecast year-by-year usage of each fuel, as is required to calculate the present value of the system operating costs. In his statement of fact, Dr. Rosenzweig explains in detail the methodology he used to simulate the fuel usage of the Houston Lighting and Power Company system and to compare that with the capital costs of new coal-fired powerplants.

Q. What assumptions did you make regarding oil and natural gas prices?

A. Because the economic viability of coal conversion depends heavily on the operating cost savings obtainable by dispatching high priced oil-and natural gas-fired generating units, two different price forecasts were developed for fuel oil and natural gas in the southwest through the year 2005. One is based on low world prices for crude oil, the other on high prices. Together, these forecasts are likely to bracket the actual future prices of these fuels.

The low price forecast assumes a level world price of $15 per barrel for crude oil until January 1988, then escalates at 2 percent above general inflation through the year 2005. The high price forecast assumes a level world price of $15 per barrel for crude oil to January 1985, then escalates at 5 percent above general inflation to a ceiling of $35 per barrel, reached in the year 2002. (All of the above prices are expressed in constant 1978 dollars). These two price paths were developed on the basis of a recent study conducted by DOE's Energy Information Administration: An Evaluation of Future World Oil Prices, Analysis Memorandum No. AM/1A-7805, June 2, 1978. That study estimated the world prices of crude oil required to clear the market under varying assumptions about maximum OPEC productive capacity and the economic growth rates of consuming nations. The EIA study did not assume any ceiling on crude oil prices; however, such a ceiling is likely to be determined by the potential abundance of synfuel alternatives to petroleum, such as coal gasification.

The residual oil, distillate oil and natural gas price forecasts were derived from the crude oil prices using the DOE PIES model. In doing this I assumed that natural gas will be deregulated by 1985 in accordance with the compromise bill currently before Congress and

that oil refiners in the southwest will pay approximately the world price for crude oil. Exhibit 1 presents these price forecasts.

Q. How significant is the cost of transporting western coal relative to the total cost of coal delivered to the plant?

A. In most cases it is very significant. Naturally this depends on the proximity of the plant to the coal field; however, most large boilers fired by this coal today (and in the foreseeable future) is likely to be located at distances in excess of 500 miles from the mine. Furthermore, this coal has a lower Btu content than eastern coals so more has to be transported for a given amount of energy. Thus, transportation cost represents a major portion of the delivered cost of western coal.

III. RAIL TARIFFS FOR WESTERN COAL IN MARKET DOMINANT SITUATIONS

Q. Have you formed an opinion on what the floor should be on rail tariffs applicable to new movements of western coal?

A. Yes I have. Rail tariffs for each new movement should be set sufficiently high to preclude reducing the carrier's going concern value. This condition is attained only if the revenue derived from the new movement is at least sufficient to cover the incremental

costs associated with providing the service. 3/ Thus, the floor on the rail tariff for a new movement is that rate per ton, levied over the life of the movement, which covers the incremental cost of the movement. In my statement I refer to this rate as the Minimum Viable Tariff or MVT. The MVT is the relevant economic litmus for any firm to use in making decisions regarding its prices and outputs. As jointly stated by some of the authorities in economics:

> "Incremental costs indicate (by comparison with the incremental revenue they will bring) whether additional outputs of any commodity are worth producing and (by incremental cost comparisons) which of the alternative ways of satisfying wants or requirements is the most efficient." 4/
>
> "As a general rule, any rate below incremental costs is both unprofitable and socially wasteful of resources because the additional (incremental) revenue obtained is less than the additional costs incurred."5/

3/ As used in this testimony, incremental cost is the present value of present and future costs incurred by the firm due to discrete changes in output. For example, see Price, J.P. and Berardino, F.J., "Defining Economic Terms Used in the Railroad Revitalization and Regulatory Reform Act," Transportation Law Journal, Vol., 9, No. 1 (1977), p. 147.

4/ Baumol, et al, "The Role of Costs in the Mininum Pricing of Railroad Services," 35 Journal of Business, October 1962, p. 358.

5/ Infra, p. 362.

should evaluate alternative investment opportunities by comparing the incremental revenues with the incremental costs attributable to each and should reject those opportunities offering revenues which do not at least cover their incremental costs. The converse of the above argument is also true: any investment opportunity offering additional revenues in excess of its incremental costs will increase the firm's profits and thus contribute to its going concern (and market value).

The reason for setting the floor on rail tariffs equal to the MVT is thus clear. At this tariff the railroad should be indifferent to taking on the new traffic; its going concern value is neither increased nor decreased by providing the service. Thus, setting a tariff for a new movement equal to the MVT would ensure that this new business would "stand on its own wheels."

Q. WHAT IS THE VALUE OF THE MVT FOR THE COAL MOVEMENT TO THE HOUSTON LIGHTING AND POWER COMPANY'S W.A. PARRISH PLANT?

A. For the HL&P movement the MVT is $9.90 per ton, applicable today (mid-1978). This assumes periodic adjustments through general rate increases to adequately reflect inflationary increases in railroad operating costs.

Q. YOU SAID EARLIER THAT MR. BARDWELL CALCULATED THE MINIMUM VIABLE TARIFF. SPECIFICALLY, WHAT INSTRUCTIONS DID YOU PROVIDE TO HIM?

A. I instructed him to develop the incremental costs for the HL&P coal movement. This was to be done using a methodology of his choice which took into account, and adjusted for, the unique characteristics of coal unit trains operating in the western states.

With respect to the required investment in fixed plant, I directed him to accept the estimates claimed by the carriers in recent filings before the ICC and to make no attempt to assess the need for, or reasonableness of, these expenditures, or their causal relationship to the coal movements of interest. An independent assessment of these costs was unnecessary and inappropriate given the generic nature of this proceeding.

To determine the capital recovery component of the tariff, I specified the cost of capital applicable to the carriers involved in the movement. I also specified that a composite Federal/State income tax rate of 50 percent be used since it is assumed that the railroads involved will remain profitable over the life of the new movements. I further stipulated that the tax

savings accru ing to the railroads from the investment tax credit, use of accelerated depreciation and shortened asset life (per the ADR guidelines) were to be excluded in the analyses. 6/ Finally, I specified a 20-year life for the new coal movement since this is the minimum life for most new contracts currently being negotiated by utilities with coal mines. All the capital costs incurred by the railroads as a result of the coal movement were to be recovered through the MVT by the end of that period. Implicitly this assumes that if the coal movement is to continue beyond 20 years, the tariff will be adjusted at that time to adequately account for the recovery of additional capital investments which may be required to sustain the service.

In addition to the above instructions, I requested that the consultant calculate the return on investment, on a project basis, for the coal movement at various tariff levels above the MVT.

6/ This results in the MVT providing the railroads a return on investment which actually is in excess of their cost of capital.

Q. WHAT IS THE BASIS FOR THE COST OF CAPITAL YOU SPECIFIED FOR THE RAILROADS?

A. I used the recommendations of the expert witness, J. Rhoads Foster, testifying on behalf of those same railroads in filings before the ICC. It is not the intention of DOE to independently estimate the cost of capital for these carriers but merely to illustrate the MVT calculation and to approximate its value for the coal movement of interest.

In very recent (July 1978) testimony submitted to the Commission, Dr. Foster estimated the current cost of new debt and new equity capital as 8.4 percent and 14.0 percent, respectively, for a group of ten financially healthy railroads.7/ He also determined that the average capital structure for these same railroads during 1977 was: 40.5 percent debt, 1.1 percent preferred stock and 58.4 percent common equity.8/ These data are almost identical with Dr. Foster's earlier cost of capital estimates submitted in ICC Docket No. 36108.

7/ Verified statement of J. Rhoads Foster submitted in Ex Parte No. 353, THE FAIR RETURN COMPONENT OF ADEQUATE RAILROAD REVENUE LEVELS, July 1978, pp 68-74.

8/ Infra, pp. 91-92.

Combining Dr. Foster's estimates and using the same approximate capital structure as he did in his Docket No. 36108 testimony, I calculated the weighted average cost of capital to be 10.04 percent for the 10 railroads selected by him. Exhibit 2 presents the detailed calculation. For ease of application I rounded this to 10 percent. This figure was provided to witness Bardwell for him to use as the after-tax cost of capital applicable to the Burlington Northern and the Atchison, Topeka and Santa Fe railroads. Both of these carriers were included in the group of ten railroad used by Dr. Foster in his analysis.

Q. ARE YOU ENDORSING WITNESS FOSTER'S COST OF CAPITAL ESTIMATES?

No. I used his capital cost estimates because I and my associates needed such estimates in order to demonstrate the calculation of the MVTs and Dr. Foster's estimates of the cost of debt and equity capital appear to be reasonable. However, in combining these two estimates to derive the overall cost of new capital Dr. Foster did not adjust for the tax deductible nature of interest. This must be done before such a cost of capital estimate is in a form suitable for use in a DCF calculation such as that which witnesse Bardwell has done in this proceeding.

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Q. DO YOU ADVOCATE SETTING RAIL TARIFFS AT THE MVT?

A. No, I do not. Some premium must be added to the MVT for two reasons:

- to ensure that errors in estimating the incremental costs of the movement do not preclude these costs from actually being covered;
- to contribute to the fixed costs and profits of the carrier, thereby promoting the financial health of the railroad.

It is important to recognize that cost estimation is not an exact science. For example, estimates of the cost of equity capital always contain uncertainty. Other cost estimates, particularly those applicable to indirect costs, also carry with them varying degrees of uncertainty.

Each time a new movement is initiated on a carrier's system, for which the tariff charged exceeds the MVT, upward pressure is exerted on the price of the carrier's common stock due to the likely prospect of improved future earnings per share. This anticipated earnings growth and price appreciation makes the carrier's securities more attractive to investors and ensures the

ability to raise new debt and equity capital in the money markets.

Q. BY HOW MUCH SHOULD A TARIFF EXCEED THE MVT?

A. There is no tidy formula for determining the "correct" size of the premium. I would, however, urge that in making such determinations, the Commission explicitly take into consideration the rate of return which the carrier will earn on its incremental investment required to accommodate each new movement. This provides a good indication of how lucrative this new business is for any given tariff level.

Q. HAVE YOU COMPUTED THE RETURN ON INVESTMENT FOR VARIOUS TARIFFS PERTAINING TO SPECIFIC WESTERN COAL MOVEMENTS?

A. At my request, witness Bardwell did this for the HL&P movement. His statement contains those figures. For example, he determined that the carrier's after-tax return on investment is 43 percent for the tariff currently approved for the HL&P movement to Fort Ben, Texas. This would be considered very attractive project by most Fortune 500 firms, particularly in light of the relatively low risk to the railroads.

Q. FROM THE RAILROAD'S VANTAGE, HOW RISKY ARE WESTERN COAL MOVEMENTS?

A. Not very risky. In most business ventures, the primary source of risk is revenue uncertainty in the face of the certainty of having to cover the incremental fixed costs associated with a new project. These are not significant factors with respect to new coal movements.

On the demand side, the likelihood that an anticipated coal movement will not materialize, or will prematurely cease, is small. In order to utilize coal the shipper must make a major investment in a boiler, fuel handling facilities and associated environmental equipment, all of which are designed with a specific type of coal in mind. For this very reason, it is common practice for a coal user to enter into a long-term contract with a mine which can produce an acceptable quality coal. Indeed, in the case of large coal-fired plants, new mines will frequently be opened on the basis of such contracts. Typically, the cancellation of such a coal contract involves the payment of heavy penalties and leaves the utility or industrial firm with the difficult problem of finding a suitable substitute fuel.

Clearly then, the only practical substitute fuel is another source of coal. But finding a new source of acceptable coal is no easy task as demonstrated by the experiences of midwestern utilities during the past two coal strikes. Furthermore, in a situation of market dominance the shipper is likely to have a limited choice of carriers.

On the supply side, to accommodate new traffic a railroad might have to make some investment in fixed plant such as new sidings, improved signaling equipment and heavier rail, much of which provides operating improvements applicable to other traffic as well. Before making these investments a railroad can monitor the degree of commitment to coal use on the part of a prospective shipper, for example, by observing

progress on boiler fabrication and erection. Because of the long lead times which the coal user confronts, the carrier can defer at least some of his investment until after he is sure the shipper is committed.

In those cases where a new investment is required in facilities specifically dedicated to one shipper, (e.g., spur lines to his plant) he will most likely be required to provide those funds. For example, most large coal shippers already provide their own hopper cars. Clearly then all, or most, of the carrier's incremental investment will be in locomotives which are easily assigned to other movements on his system, or are readily marketable.

In light of the fungible nature of most of a carrier's incremental investment required to accommodate new western coal traffic, there is very little likelihood that the new productive assets acquired by the carrier to accommodate a new coal movement would stand idle even in the unlikely event of that coal traffic prematurely terminating.

To summarize, the investment opportunities represented by western coal movements in situations of market dominance involve low risk on the part of the railroads.

U.S. DOE
Exhibit No. 1
Witness Borlick

Oil and Natural Gas Prices Forecasted For Texas
(cents per million BTU)

Fuel	1978	1985	1990	1995	2000	2005
(Low Oil Prices)						
Distillate Oil	2.16	3.15	3.40	3.70	4.00	4.35
Residual Oil	1.98	2.65	3.00	3.30	3.60	3.95
Natural Gas	1.33	2.75	3.20	3.70	4.00	4.35
(High Oil Prices)						
Distillate Oil	2.16	3.15	4.00	4.95	6.10	6.70
Residual Oil	1.98	2.65	3.60	4.55	5.70	6.30
Natural Gas	1.33	2.75	3.70	4.95	6.10	6.70

U.S. DOE
Exhibit 2
Witness Borlick

Weighted Average Cost of Capital
for 10 Railroads of Relatively
Superior Investment Quality 1/

Type of Capital	Percent of Capitalization	Investor Required Return	Tax 2/ Credit	Weighted Component
Debt	40%	8.2%	4.1%	1.64%
Equity	60%	14.0%	0.0%	8.40%
Totals	100%			10.04%

1/ The railroads selected are: Santa Fe, Burlington Northern, Chessie Systems, Rio Grande Industries, Missouri Pacific, Norfork and Western, Seaboard Coast Lines, Southern Pacific, Southern Railway and Union Pacific.

2/ It is assumed that these railroads will be profitable and thus pay State and Federal income taxes at a composite marginal rate of 50 percent. Thus, because interest payments are tax deductible, the after-tax cost of debt capital is only approximately half the interest rate since an income tax credit of this size is realized as long as the firm has taxable income.

VERIFICATION

DISTRICT OF)
) SS
COLUMBIA)

ROBERT BORLICK, being duly sworn, deposes and says that he has read the foregoing statement, knows the facts asserted therein, and that the same are true as stated.

Robert L. Borlick
ROBERT BORLICK

Subscribed and sworn to before me this 3rd day of August 1978

Janice L. Hilgit
Notary Public

My Commission Expires Jan. 14, 1981

VERIFIED STATEMENT OF FACT

MICHAEL B. ROSENZWEIG

Q. Please state your name and business address.

A. My name is Michael B. Rosenzweig. My business address is 1111 20th Street, N.W., (Vanguard Building), Room 527, Washington, D.C. 20461.

Q. By whom are you employed and in what capacity?

A. I am the Senior Operations Research Analyst in the Economic and Financial Analysis Branch, Division of Regulatory Proceedings, Office of Utility Systems, Economic Regulatory Administration, Department of Energy.

Q. What is your educational background?

A. I hold a Ph. D. Degree in Applied Mathematics from the Institute of Fluid Dynamics and Applied Mathematics at the University of Maryland. My area of emphasis was the numerical solution of differential equations. I also have an MBA degree from the University of Maryland with a specialization in operations research, and course work in finance, economics and management theory.

In addition, I have recently completed the Regulatory Studies Program sponsored by the National Association of Regulatory Utility Commissioners and Michigan State University.

Q. Please describe your past employment and professional experience.

A. While pursuing the Ph.D. Degree, I joined the faculty of the Mathematics Department at the United States Naval Academy in Annapolis, Maryland. I taught a full range of undergraduate courses and carried out research work in my specialty area.

In 1973, I joined the consulting firm of Lulejian & Associates. My assignments were quantitative analyses of military/defense systems, including submarine surveillance, satellite reconnaisance of naval vessels and bomber penetration studies.

I subsequently was employed at the Goddard Space Flight Center operated by the U.S. National Aeronautics and Space Administration. At Goddard, I headed the Operations Research Branch and was responsible for producing studies on a wide range of management problems, including resource allocation, manpower management, and spacecraft project management.

In 1976, I joined the Federal Energy Administration. My analytical efforts were concentrated in the area of electric utility supply. I participated in the development of the Electric Power Sufficiency Monitoring

System. I performed coal conversion analyses in support of the development of the National Energy Plan. I also was a member of the White House Council of Economic Advisors Coal Strike Task Force.

Before assuming my present position, I was Acting Chief of the Electric Power Analysis Division in the Energy Information Administration in the Department of Energy. That Division is responsible for analyses concerning electricity supply and reliability, utility finance and regulation.

Q. What are your responsibilities in your present position?

A. As Senior Operations Research Analyst in the Economics and Finance Branch, I have lead responsibility for the design and implementation of technical analyses involving large-scale models and for the development and presentation of testimony associated with such analyses. In particular, I focus on the evaluation, design, and utilization of integrated models describing the electric utility industry. My duties also include directing other Division personnel and contractors and facilitating the necessary coordination with other offices in the Department.

Q. What is the subject of your Statement.

A. My Statement evaluates the impacts of higher rail tariffs on coal conversion decisions by electric utilities.

Q. How is your Statement organized?

A. My Statement is organized in two parts. Section I presents the results of the analyses I performed to evaluate the estimated impacts of two different coal tariffs on the consumption of oil and natural gas by a major Texas utility. Section II describes in detail the methodology I employed to analyze this utility system.

I. CASE STUDY IN ELECTRIC UTILITY COAL CONVERSION

Q. Would you briefly describe the coal conversion analysis you performed with respect to a particular electric utility?

A. The Houston Lighting and Power Company (HL&P) was selected as a case study in order to illustrate the coal conversion decision process at a typical electric utility which is predominately dependent on oil and natural gas. In this study, two types of decisions were examined:

(1) plant operation decisions for a fixed capacity mix; and

(2) system capacity expansion decisions.

From the present through 1985, the HL&P system is faced with the challenge of minimizing its fuel costs given its existing capacity mix and new capacity which is already under construction and will be completed by 1985. The high cost of oil and natural gas, combined with consumer and governmental pressures to keep the price of electricity as low as possible, make minimizing fuel costs a central consideration in all operating decisions by the utility. Any utility in this situation will, to the greatest extent possible, dispatch first and operate to the greatest extent possible, those generating units which have the lowest fuel costs.

In addition to the near-term plant dispatch problem, HL&P also faces the much more complex decision of optimizing its capacity mix in the post-1985 period. Due to the lead times required to construct new base load units, the decision to optimize capacity in the post-1985 period must be addressed today. That decision will depend on an economic assessment of the trade-off between retaining in service existing oil or natural gas-fired generating units or constructing new coal-fired generating units to supplant them.

Q. What were the utility-specific results you obtained?

A. The case study done for HL&P clearly showed that both its plant operation and capacity expansion decisions are sensitive to the costs of alternative fuels. Significant amounts of oil and natural gas displacement become uneconomic as the rail tariff for western coal is raised above the minimum viable tariff to the tariff currently in effect for the W.A. Parrish plant. (See the Verified Statement of Mr. Bardwell for a computation of the minimum viable tariff.) The impact of the higher tariff through 1985 will be to preclude reductions in oil and natural gas consumption by the HL&P system equivalent to 2800 barrels per day (BPD) of residual oil. From 1986-2000, the higher coal tariff precludes reduction in oil and natural gas consumption by average of 14,000 to 27,000 BPD. These results are summarized in Exhibit 1.

The oil and natural gas prices used in this analysis were those based on the two world oil price cases discussed by witness Borlick in his Statement.

Q. Briefly describe how these results were derived.

A. A commercially available production costing/economic dispatch model (PROMOD III) was employed to simulate through the year 1985 the operation of the HL&P system as it currently exists and as it will exist with the addition of that generating capacity currently under construction. These simulations were performed for the minimum viable tariff and the current tariff for coal now being delivered to the W.A. Parrish Plant. The change in oil and natural gas used at the two different tariffs measured the effect of the change in the tariff.

A similar procedure was utilized to measure the effect of the coal tariff over the period 1986-2000. Year-by-year differences in operating costs for this period were used to determine the optimal timing of new coal-fired plant construction in light of the two rail tariffs mentioned above. More specifically, if in any year the annual fuel savings to be derived from operating one additional coal-fired generating unit exceeds the capital carrying charge (or equivalent "rent") of that

plant, the utility should bring an additional unit into service in that year even though the additional unit is not required to meet the anticipated growth in demand. After determining the optimal schedule of plant additions in light of each coal tariff, the oil and natural gas usage for the two schedules were compared. Again, the difference in oil and natural gas use reflected the effect of the change in the tariff. This analysis was done for each of the two world oil price cases referred to earlier.

Q. What are the basic assumptions which drive your analysis?

A. The most important assumptions driving the results are fuel prices. Current oil and natural gas prices and those forecasted through 1985 were provided by HL&P on the basis of existing contractual arrangements. The post-1985 oil and natural gas prices were developed by Mr. Borlick. These price forecasts are summarized in Exhibit 2.

Second to fuel prices in importance is the assumed growth rate in electricity demand. The annual growth rate for HL&P's service area was assumed to gradually decline from the current 7% to 3.5% by 1985. The 3.5% growth rate was assumed to continue through the year 2005. These growth rates are based on company projections.

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Furthermore, it was assumed that the hour-by-hour load shape remained unchanged over this same time period.

The prototypical coal plants to be added to existing capacity were assumed to be identical to the most recent coal unit (No.8) being added to the W.A. Parrish Plant. This unit has a 570 MW nameplate capacity and is equipped with a flue gas scrubber.

Finally, it was assumed that HL&P would remain a financially healthy utility and would continue to earn an adequate rate of return, enabling it to raise the additional capital to construct new coal-fired capacity.

Q. How does the utility system projected by this study compare with the future plans of HL&P?

A. My study produced two prescriptive schedules of coal-fired plant additions based on DOE forecasts of the average fuel prices in Southwest and on other assumptions. Both of these schedules may be different from that which HL&P ultimately constructs for several reasons. Its utility-specific fuel forecasts may not be in agreement with the regional forecasts I used. Furthermore, the only criteria employed in my idealized study are cost and service reliability; however, in addition to these considerations, HL&P must deal with a number of other factors reflecting environmental, political and regulatory realities.

Q. Approximately how much more will HL&P customers pay for their electricity due to the amount by which the currently approved coal tariff exceeds the MVT?

A. Assuming operation of a fuel adjustment clause enabling HL&P to recover all fuel costs, HL&P customers will pay an additional $360 million (in constant 1978 dollars) over the next year eight years as a result of the amount by which the approved tariff exceeds the MVT.

II. METHODOLOGY FOR ANALYZING UTILITY COAL CONVERSION

Q. Would you describe the simulation model you used to analyze coal conversion on the HL&P system?

A. As stated above, a commercially available production cost model, PROMOD III, was employed. This model is at the state-of-the-art and is currently used by a number of large utilities around the country (e.g., Commonwealth Edison). The model is available to DOE on the basis of a perpetual lease and is resident on the DOE computer system.

PROMOD performs a probabilistic simulation of the future operation of a specified utility system. The system is specified as to number and type of units and individual unit characteristics (e.g., thermal efficiencies, size) on an incremental basis and by fuel type.

Also, detailed fuel prices and, if applicable, fuel quantity limitations are required data inputs. The projected demands for service are also required.

The operation of the system being modeled is the dispatch or commitment to service of individual units to meet the projected load on an hourly basis for the entire study period. The underlying assumption of this model is that the unit commitment decision at any given point in time is based on minimizing the additional cost to meet additional demand. This is called economic dispatch. PROMOD simulates the economic dispatch of the specified utility system subject to real world limitations imposed on the system, such as fuel quantity constraints, availability of units and the ability of a given unit to run at less than full capacity or even to be turned on and off.

One of the major factors in modeling a utility system (in addition to the variability of the demand for electricity) is the random nature of unit failures. PROMOD III models this limitation, referred to as forced outages, in a completely probabilistic manner, which is the state-of-the-art approach in production costing models. This approach recognizes that potentially each generating unit will be on forced outage when its or part of its capacity is required to meet the load. This approach permits the reflection in the simulation of the expected additional requirements imposed on the system by such events.

The output of the model is a forecast of the primary costs of generating electricity, namely, fuel costs, capital costs and variable operating and maintenance costs.

Q. How was the model specifically employed?

A. First, a data base was assembled which represented the current HL&P system and the planned system configuration through the 1980's. Next, this fixed system was simulated for the 1978-85 period with the PROMOD III program for two coal tariffs. One tariff corresponded to a minimum viable tariff as developed by witness Bardwell and the second tariff equalled that which recently has been approved for the W.A. Parrish coal plant at Smithers Lake. The projected consumption of oil and natural gas required to generate electricity to meet the forecasted loads in the two cases was then compared. This completed the first phase of the analysis which focused on the near-term effect of coal tariffs on plant dispatch.

The second phase of the analysis dealt with the longer-term implications of coal tariffs on HL&P's capacity

expansion program. This involved a much more complicated methodology using PROMOD as the central element to estimate the implications of a higher coal tariff on the decision of HL&P to replace existing oil and natural gas-fired plants with new coal capacity.

Due to the average lead times for constructing new power plants (7-8 years for coal, 10-12 years for nuclear), a decision to build additional plants for coal conversion purposes could have no impact before 1986. Thus, the study of the effects of coal conversion began with 1986. As a result of the uncertainty over fuel prices in the distant future, only a 20 year period was investigated for the operational impacts even though a new coal plant is likely to be used for 30 or more years. Furthermore, it was determined that a 20 year analysis period accounted for about 85% of the present value of production costs occurring over the 30 year period.

The actual mechanics of the capacity replacement analysis involved the following steps:

(1) Data base development:

- The forecasted peak and average demand for electricity, and the associated load shape, were assembled from HL&P data.

- The existing and planned generating unit characteristics, such as fuel burning capability, size, heat rates, reliability and maintenance requirements were assembled from HL&P data.
- The existing and planned intertie capabilities with other utility systems were assembled from HL&P data.
- The price paths and availabilities of fuels were developed by DOE on the basis of assumptions made regarding world oil prices for the years 1986 through 2005.

(2) Comparative analysis:

- A simulation of the HL&P system based on the current company plans for new plant construction was carried out through the year 2005. This provided a base case of oil and natural gas use against which to test the attractiveness of possible replacement by new coal capacity.
- Next, a capacity replacement algorithm was applied to the planned HL&P system to "optimize" the timing of coal capacity additions given the minimum tariff for the study period.

This algorithm was then repeated under the higher tariff. The difference in oil and natural gas use between the two optimized coal expansion plans was determined; this provided a measure of the impact of the tariff variation.

- Finally the entire analysis was repeated for the alternate forecast of oil and natural gas prices.

Q. Would you describe the algorithm you used to optimize the timing of new coal plant construction in the 1986-2005 period?

A. The system expansion algorithm is based on the following concepts:

As the demand for electricity by HL&P's customers increases over time, the company must add new capacity to the system to satisfy the increasing load. This capacity is added in discrete quantities, typically in the form of large, coal-fired or nuclear generating units. HL&P is committed to developing a balanced mix of coal and nuclear units to diversify the risks associated with the construction and operation of either type of plant.

As a utility plans addition to its generating system, it has some degree of flexibility in the time schedule for expansion. One limit of this flexibility is, of course, that the utility must have sufficient capacity to meet demand and thus cannot bring plants on later than needed. However, the in-service date of future units can be accelerated within limits. The limit on this activity, for the purposes of this analysis, was determined by construction lead times. For coal units that limit currently is about 1985; for nuclear plants it is about 1988. Therefore, the only candidates for scheduled acceleration to 1986 are coal plants.

The benefit of bringing one or more units into service before they are required to meet demand is that generation which would otherwise be derived from oil and natural gas in the original system would be produced by other fuels at a lower cost. The cost of these fuel savings is the capital carrying cost to the utility of investing in the plants sooner.

PROMOD was used to simulate the reduction in operating costs which would result from adding additional coal plants to the system for the period 1986-2005. The optimal number of plants to

accelerate to 1986 was then determined by comparing the incremental reduction in production costs with the incremental carrying cost of each accelerated plant. This comparison was sequentially repeated for each year of the study period until incremental production cost savings attributable to the unit under scrutiny fell short of its carrying costs. In that year, and in all subsequent years, the unit was treated as capacity originally planned for meeting normal demand growth. No further oil or natural gas savings could be attributed to this unit in these years.

U.S. DOE
Exhibit No. 1
Witness Rosenzweig

Impact Of A Higher Rail Tariff For Western Coal on Oil and Natural Gas Use
By Houston Lighting and Power Company

Oil Price Case	Coal Tariff 1/	Average Oil and Natural Gas Usage (Barrels per day of residual oil equivalent)	
		1978-85	1986-2000
Low	Current Tariff	205590	90360
Low	Minimum Viable Tariff	202830	62970
	Incremental Increase	2760	27390
Moderate	Current Tariff	2/	48560
Moderate	Minimum Viable Tariff	2/	34940
	Incremental Increase	2/	13620

1/ The tariff currently in effect for coal shipped from Campbell County, Wyoming to the W.A. Parrish Plant in Fort Ben, Texas, is $15.60 per ton. The minimum viable tariff for this same movement is $9.90 per ton.

2/ The low and high oil and gas price cases are identical through the period 1978-1985; thus, the oil and gas use is the same for both cases.

U.S. DOE
Exhibit No. 2
Witness Rosenzweig

Assumed HL&P Fuel Costs For Coal Conversion Analyses
(cent per million BTU) 1/

Fuel	1978	1985	1990	1995	2000	2005
(Low Oil Price Case)						
Distillate Oil	2.16	3.15	3.40	3.70	4.00	4.35
Residual Oil	1.98	2.65	3.00	3.30	3.60	3.95
Natural Gas	1.33	2.75	3.20	3.70	4.00	4.35
Coal (current tariff) 2/	1.75	1.87	1.97	2.07	2.17	2.28
Coal (MVT) 2/	1.38	1.48	1.56	1.64	1.72	1.81
(Moderate Oil Price Case)						
Distillate Oil	2.16	3.15	4.00	4.95	6.10	6.70
Residual Oil	1.98	2.65	3.60	4.55	5.70	6.30
Natural Gas	1.33	2.75	3.70	4.95	6.10	6.70
Coal (current tariff) 2/	1.75	1.87	1.97	2.07	2.17	2.28
Coal (MVT) 2/	1.38	1.48	1.56	1.64	2.17	1.81

1/ The fuel costs shown are the costs delivered to the W.A. Parrish Plant. The coal costs include an allowance for the capital and operating costs of the rail cars owned by HL&P.

2/ The tariff currently in effect for coal shipped from Campbell County, Wyoming to the W.A. Parrish Plant in Fort Ben, Texas, is $15.60 per ton. The minimum viable tariff for this same movement is $9.90 per ton.

VERIFICATION

District of Columbia (SS (

MICHAEL B. ROSENZWEIG, being duly sworn, deposes and says that he has read the foregoing statement, knows the fact asserted therein, and that the same are true as stated.

Michael B. Rosenzweig

Subscribed and sworn to before me this 21st day of July, 1978

Notary Public

My Commission Expires June 30, 1979

Notary Public In and For The
District of Columbia
Bonded By: International Risks, Inc.

VERIFIED STATEMENT OF ROBERT BARDWELL

Q. Please give your name and business address.

A. My name is Robert Bardwell and my business address is 910 17th Street, N.W., Washington, D.C.

Q. By whom are you employed and in what capacity?

A. I am employed by Gellman Research Associates, Inc., and I manage their Washington office.

Q. What is your educational and professional background?

A. I was graduated from the University of Colorado in 1951 with a Bachelor of Science degree in Engineering Physics. Thereafter, I have held a number of positions, first in scientific research, then in government and business management. In 1960, I became the leader of the Systems Studies Group for the Australian Atomic Energy Commission. In that position, I was responsible for the development of economic models of specific power generation plants as well as power generation systems as a whole. An important part of this work involved the development of methods for equating initial and periodic capital expenditures with ongoing operating expenses. The methods developed now are called "return on investment" calculations.

In 1965, I became the Director of Planning for the Denver and Rio Grande Western Railroad Company. My responsibilities included supervising analyses of capital investment projects which involved rate of return calculations. In 1967 I was co-author of a paper

entitled "A Rail Renewal Problem" for the Railway Systems and Management Association. The paper describes the application of return on investment calculations to a complicated railroad problem.

In 1969 I joined the Colorado Corporation, a firm involved in oil and gas exploration and development where I was responsible for the analysis of investments in oil and gas and real estate. I developed computer programs which used return on investment calculations to perform the analyses.

In 1976 I joined Gellman Research Associates, a firm which specializes in economic research. As manager of the Washington office, I have contributed frequently to research efforts in railroad economics and finance.

Q. Please describe the circumstances which led to the presentation of your verified statement.

A. In June 1978, I was asked by the Department of Energy to develop cost information relating to a specific movement of coal by rail in the western United States. The rail movement identified by DOE was between Campbell County, Wyoming and Fort Ben County, Texas. Through Gellman Research Associates I retained Mr. Harter Williams of Harter Williams Associates to assist me in

an analysis of variable rail operating costs using the ICC Rail Form A procedure. (See Mr. Williams' Verified Statement for a calculation of variable rail operating costs.)

Q. What was the objective of your analysis?

A. My objective was to calculate the incremental costs of the coal movement identified by DOE to obtain the minimum viable tariff, as defined in witness Borlick's Statement. This involved calculating the capital costs of the incremental investment required by the movement and the associated variable operating costs. These two costs were then summed.

Q. Why did you require Mr. Williams to use the Rail Form A procedure in order to calculate the variable operating costs of the movement referred to above?

A. Mr. Williams used the Rail Form A procedure to calculate variable operating costs because that procedure remains as the primary costing methodology recognized by the ICC. Although the Commission may develop a more effective cost accounting technique in the future, I believe that the Rail Form A procedure, when accurately adjusted for movement-specific conditions, is a reasonable and adequate method for deriving the variable operating costs of a railroad shipment.

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Q. Will you summarize how you calculated the capital costs?

A. I first collected the most reliable technical information available to me to describe the rail movement referred to above. From this information I calculated the capital investment by the railroad which was specifically required to effectuate the movement for a 20 year period. Then, from an analysis of the timing, the magnitude and the subsequent effects of those investments, I calculated the amount of money which, if added to the variable operating costs, would return to the railroads not only their capital investment but also a 10 percent after-tax return on the invested monies. These invested monies included both debt and equity capital.

Q. What assumptions did DOE instruct you to use in these calculations?

A. DOE instructed me to use a 10 percent after-tax cost of capital and a 50 percent corporate tax rate. I also was instructed not to include the effects of the investment tax credit, accelerated depreciation or shortened (ADR guideline) asset life in my income tax calculations.

DOE also stated that the coal movement was to be assumed to last 20 years and that if it should continue beyond that time, the Commission might have to adjust the tariff at that time to insure that any additional capital investment required (such as locomotive replacement) would be recovered from the tariff on subsequent traffic.

Q. What assumptions did you make in your analysis and why did you make them?

A. Based on my professional experience, I assumed that the locomotives and the cabooses purchased in order to effectuate the movement would remain in service and be fully productive for 20 years. The problem of equipment replacement thus did not have to be treated in my calculations. In order to calculate the cash-flow consequences of this equipment at the end of the coal movement, I estimated that their salvage value would be 10 percent of the original purchase price. Although this estimate could be inaccurate, it is easily shown that a large variation in this value will produce only a very small change in the dollar amount per ton associated with the capital cost.

With respect to the salvage value of the fixed plant investment, I assumed it would be equal to fifty percent of the original capital investment. I further assumed that during its life, the fixed plant would not be depreciated for tax purposes. These last assumptions were made because of a lack of detailed information in this area; however, my assumptions are consistent with normal railroad practice and experience. Again, it can be shown that a relatively large change in the salvage values will only cause a small change in the dollar per ton result.

Q. Will you describe in detail the coal movement you were asked to analyze?

A. The movement concerns the Houston Lighting & Power Company (HL&P) and the transportation of coal from Wyoming to Texas. HL&P began receiving unit train service at its generating plant in Fort Ben County, Texas in April 1978. Their coal comes from the Jacobs Ranch Mine in Campbell County, Wyoming. The mine is owned by Kerr-McGee and is located 48 miles south of Donkey Creek, Wyoming where the main line of the Burlington Northern (BN) is located. From Donkey Creek, the BN carries the coal to Edgemont, South Dakota; Alliance, Nebraska; and Sterling, Colorado. The BN then operates over Union Pacific track to Union,

Colorado rejoining the BN system to Bruch, Colorado and finally to Denver, Colorado. From Denver, the train runs on the Colorado and Southern (C&S, a BN subsidiary) track to Pueblo, Colorado; Trinidad, Colorado; and Texline, Texas. Between Denver and Pueblo, the C&S operates on trackage rights over the D&RGW and the AT&SF. At Texline, the Fort Worth and Denver Railroad (FW&D, another BN subsidiary) takes the coal to Forth Worth, Texas. The AT&SF then operates the train through Thompsons, Texas to Fort Ben County, Texas where the W.A. Parrish Plant of Houston Lighting & Power Company is located. The total distance from Wyoming to Texas is 1,606 miles.

Houston Lighting & Power Company plans to receive up to 5,000,000 tons of coal a year after a first year volume of approximately 4,000,000 tons. Loading at the Jacobs Ranch mine, which takes about four hours per train, is done from four silos, each of which has a 15,000-ton capacity. A loop track has been built through these silos where the cars are flood-loaded. The coal is put into cars owned by HL&P, which has ordered 1,100 super gondola cars for the unit train operation. As more new cars become available, the railroads will add one train a month to the schedule. The turnaround

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time is now nine and one-half days with four trains in the circuit. Apparently, the HL&P operation has experienced a bad order ratio of 4.5 percent.

Each train consists of 110 cars of 105-ton capacity per car. Locomotive power requirements vary depending on the segment of the route. Five locomotives are required between the mine and Denver; seven, between Denver and Amarillo; six, between Amarillo and Fort Worth; and five, between Fort Worth and the W. A. Parrish Plant. Due to the 1.6 percent grade involved, helper service is required for the 13 miles between Crawford and Belmont, Nebraska. Three slave units are used between Denver and Pueblo, a distance of 118 miles, primarily because of the grade over Monument Hill. Lastly, there are a substantial number of crew districts on route: five for the BN, three for C&S, four for the FW&D, and three for the AT&SF. Crews usually are changed on the road.

There are no particular capacity constraints on the unloading system at the power plant which involves a loop track, a rotary dumper and two belts. The unloading time has been approximately four hours with a $150 per hour penalty for any time in excess of four hours. HL&P is presently negotiating with the railroads to change this free time to five hours.

Capital costs for the Wyoming to Texas route include the purchase of 69 locomotives by the BN and the AT&SF at a cost per unit of $603,700 to $639,000; eleven cabooses also will be purchased at approximately $50,000 each. The capital investment in sidings and signals for the unit train operation amounted to $758,900.

Because the HL&P unit train currently is operating, observations on its actual operation can be made. In addition, because HL&P has been involved in extended rate proceedings before the ICC in Docket No. 36579, detailed operating information is available for this unit train operation.

During the proceedings in ICC Docket No. 36579, HL&P retained a cost consultant, Leroy Peabody, to present testimony on basic operating configurations. Much of the following information is excerpted from his presentation.

Q. Will you explain the results of your analyses?

A. For the movement from Campbell County, Wyoming to Fort Ben County, Texas, I have calculated a MVT of $9.90 per ton. This value has been calculated to reflect cost levels as of July 1, 1978.

Q. Will you describe how you developed for the movement at issue here these results which have been called the minimum viable tariff?

A. First, the variable operating costs of the movement were developed by Mr. Williams subject to the descriptions and assumptions that I have already set forth in this statement. Mr. Williams used the Rail Form A procedure to develop these costs. The details of his work are given in his testimony.

As part of his analysis I asked Mr. Williams to calculate that part of the Rail Form A cost which comes from the depreciation and the return on investment attributed to average locomotives. I subtracted this cost figure from the Rail Form A cost before adding the alternative capital cost. The allocation of variable, general and departmental overhead expenses to this item remains unchanged. The depreciation and return on investment attributed to average cabooses was not removed from the Rail Form A cost since this adjustment would have changed the result by less than $.01 per ton. The results of the Rail Form A procedure are summarized in Exhibit 1.

Q. How do you calculate the per ton charge which can be attributed to the investment required?

A. First, a time value of money is required. In this case DOE required me to use a 10 percent after-tax return on cost of capital. Then, all net cash consequences of the investment are forecasted. Net cash consequences are the sum of the capital investment, the income tax savings resulting from depreciation deductions, and the cash resulting from the sale of the equipment at the end of the movement including income tax adjustments at that time. Net cash consequences, however, do not include annual revenue flows because those flows are the variables which we seek to determine.

Next, the present value of each of these flows is calculated using the compound interest factor $1/(1 + i)^n$ where "n" is the number of time periods in the future at which the given cash flows occur and "i" is the time value of money. By convention, inflows are positive and outflows are negative.

A forecast of future inflows from revenue is now required. In order to achieve the 10 percent required rate of return, the present value of the inflows must equal the present value of the outflows. In the case in which the same amount of coal will be shipped each year, I

need the same annual cash flow for each year under consideration. The value of the annual inflow is adjusted until the sum of the present values of the annual inflows equals the sum of the present values of all other cash outflows.

At this point I have solved for the annual after-tax cash flow required to produce the expected return. Dividing that result by one minus the corporate tax rate will produce the pre-tax annual revenue requirements. Finally, dividing the pre-tax annual revenue requirements by the tons of coal shipped annually produces the amount of revenue per ton of coal which is required in order to return to the railroads their capital investment necessary to effectuate the coal movement plus a 10 percent after-tax return. Calculations for this movement are shown in Exhibit 2.

Q. Did you calculate the after-tax rate of return to the railroads on their capital investment for various tariffs set higher than the MVT?

A. At the request of DOE, I performed this calculation for tariffs exceeding the MVT by one, two, three and four dollars per ton and for the tariff currently in effect for HL&P. The results of these calculations are shown in Exhibit 3.

Q. Are working papers available for all of the calculations presented in this statement?

A. Working papers are available at the Washington office of Gellman Research Associates.

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Exhibit No. 2
Witness Bardwell
Page No. 1

RETURN ON INVESTMENT CALCULATIONS
(Campbell County, Wyoming to Fort Ben County, Texas)

A. Rolling Stock

1.	Locomotives (69 at $620,000)	$42,780,000
2.	Caboose (11 at $50,000)	$ 550,000
3.	TOTAL	$43,330,000
4.	Salvage value in 20 years	$ 4,333,000
5.	Present value of salvage at 10%	$ 644,074
6.	Net investment to be recovered (#3 minus #5)	$42,685,926
7.	Annual depreciation deduction $\frac{(0.9)(3,330,000)}{20}$	$ 1,949,850
8.	Annual tax saving #7 times 0.5	$ 974,925
9.	Present value of 20 annual tax saving at 10%	$ 8,300,060
10.	Net investment less tax saving (#6 minus #9)	$34,385,867
11.	Level annual flow* required using $A = P \cdot i$	$ 4,038,929

$$1 - \frac{1}{(1+1)^n}$$

Where A is annual amount
P is principal amount ($2,711,185)
i is rate of return (0.12)
n is number of years (20)

* Charles H. Gushee, ed., Financial Compound Interest and Annuity Tables, 4th ed. (Boston: Financial Publishing Co., 1966), p. 733-4.

12.	Annual revenue requirement (#11 divide by (1-.5))	$ 8,077,857
13.	Divide by annual tons (4,884,000)	$ 1.65

B. Fixed Property

14.	Investment in sidings and signals for unit train operation	$ 758,900
15.	Estimated salvage value in 20 years including value of tax deduction	$ 569,175
16.	Present value of salvage at 10%	$ 84,604
17.	Net investment to be recovered (#1 minus #3)	$ 674,296
18.	Level annual flow required where P = 694,296 i = 0.10% n = 20	$ 79,203
19.	Annual revenue requirement (#5 divide by (1-.5))	$ 158,406
20.	Divide by annual tons (4,884,000)	$ .03
21.	Total revenue requirement per ton (Tariff Increment) (#13 plus #20)	$ 1.68

C. Adjustment To Remove Rail Form A Depreciation And Return

The Rail Form A procedure includes, as part of the variable cost, a locomotive unit mile cost to account for average depreciation and return on average investment. These two items must be removed if an alternative calculation is to be substituted. These costs per carload are shown below.

	BN	C&S	FW&D	AT&SF
Depreciation	3.84	9.04	0.01	2.96
Return	1.50	9.65	0.27	2.74

The total of 30.01 per carload is divided by 105 tons to produce an adjustment of $0.29 per ton.

D. Adjusted Variable Cost Plus Return On New Investment (MVT)

22.	Rail Form A variable cost ($/ton)	$ 8.51
23.	Subtract average depreciation and return	$ -.29
24.	Add locomotive caboose and fixed facility capital cost	$ 1.68
25.	Minimum Viable Tariff as defined by DOE (#22 + #23 + #24)	$ 9.90

U.S. DOE
Exhibit No. 3
Witness Bardwell

Calculation of Rates of Return
for Various Tariff Levels

For a movement from Campbell County,
Wyoming to Fo Ben County, Texas

Rate per ton	After-Tax Rate of Return
$ 9.90	10%
10.90	16%
11.90	22%
12.90	28%
13.90	34%
15.60*	43%

* Tariff currently in effect for coal delivered to Houston Lighting and Power Company.

VERIFICATION

DISTRICT OF)
) SS
COLUMBIA)

ROBERT BARDWELL, being duly sworn, deposes and says that he has read the foregoing statement, knows the facts asserted therein, and that the same are true as stated.

Robert Bardwell

ROBERT BARDWELL

Subscribed and sworn to
before me this 2nd day
of August 1978

Janice L. Gilleyk

Notary Public

My Commission Expires Jan. 14, 1981

VERIFIED STATEMENT OF HARTER WILLIAMS

Q. Please state your name, occupation and address.

A. My name is Harter Williams. I am a transportation cost analyst. My address is 348 Executive Building, 1030 Fifteenth Street, N.W., Washington, D.C. 20005.

Q. What is your educational background?

A. I received my B. A. degree at Western Reserve University in 1937. The following year I was a Strathcona Fellow In Transportation at the Yale Graduate School. Since then I have had various courses in Accounting, Cost Accounting, Budgeting and Computer Studies at the International Correspondence School in Scranton, Pennsylvania, the Henry Ford Community College at Dearborn, Michigan; and at I.B.M., General Electric and Leasco Timeshare in the Washington area.

Q. What is your work experience?

A. I first had practical experience on the Erie Railroad as a track laborer, mechanical apprentice, freight clerk, yard clerk, yardmaster, and then Inspector of Operations and Transportation Assistant to the Chief

of Research. Later I assumed a cost analysis position on the Detroit & Mackinac Railroad, the Seaboard Airline Railroad, the Saudi Arabian Government Railroad (on loan from S.A.L.) and the Rouge Plant Railroad owned by the Ford Motor Company.

Since 1957 I have been an independent transportation cost analyst in Washington, D.C. and my time has been devoted exclusively to problems of cost behavior and cost/revenue measurement. To this end, I have sought to promote the use of electronic computers for faster, more accurate and more complete transportation analysis at lower cost. I believe I was the first to stand cross-examination on computer-calculated cost data at the ICC. Subsequently, I brought the first time-share terminal and the first documenting mini-computer to the ICC. I also believe I was the first to prepare standardized Rail Form A and Highway Form B applications on a computer and to utilize a computer in order to make statistical observations of traffic samples by applying costs.

Q. Please name several of your current and previous clients.

A. Among my clients are the Interstate Commerce Commission, Department of Transportation, the Internal Revenue Service, and the Bureau of Mines; various state and regional transportation agencies; the Association of American Railroads, the National Motor Freight Traffic Association, and the Freight Forwarders' Institute; the Southern, the Western Maryland, the Chesapeake & Ohio, the Maine Central and other railroad systems; and various shippers and shipper associations. Largely, because of standardized computer procedures, I have been a consultant's consultant to such firms as Gellman Research Associates, Coverdale & Colpitts and Robert R. Nathan & Associates.

Q. What evidence have you been requested to prepare?

A. I have been requested to develop the variable operating costs of a specific unit train movement on the basis of data supplied to me by Mr. Robert Bardwell of Gellman Research Associates (GRA).

Q. Briefly describe the unit train movement for which you were requested to develop the variable operating costs.

A. The coal movement at issue is described more fully in the testimony of witness Bardwell. Briefly, however, the movement concerns the annual transport of an estimated 5 million tons of coal from Campbell County, Wyoming to Fort Ben County, Texas, a distance of 1606 miles.

Q. What variable operating costs did you develop for this coal movement?

A. Using the established Rail Form A procedure, I initially calculated variable costs of $8.51/ton for the movement from Wyoming to Texas. From this figure I deducted an amount representative of average depreciation and return on capital. Thus, from the $8.51 figure I subtracted $0.29. Therefore, for the Wyoming to Texas movement, my calculations indicate a variable operating cost of $8.22. This amount does not include the capital cost of locomotives, cabooses or fixed facilities.

These latter costs which are not and should not be reflected in a calculation of variable operating costs are reflected in the minimum viable tariff calculated by Mr. Bardwell. (See Mr. Bardwell's Verified Statement)

Q. What methodology did you employ in compiling this information?

A. I prepared the data inputs for a standard Rail Form A application applicable to the Burlington Northern (BN), the Colorado & Southern (C&S), the Forth Worth & Denver (FW&D) and the Atchison, Topeka & Santa Fe (AT&SF) for the year 1977. In order to prepare these inputs, I gathered data from annual reports submitted by these railroads to the Interstate Commerce Commission and from various Commission studies concerning, for example, empty return movements of railroad cars. In addition, I used data submitted by the railroads in verified statements of expert witnesses in recent ICC proceedings.

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I organized the data into 750 input elements for the Spectra 70-35 computer program [1] used by the ICC for developing the unit costs of Class One railroads.. These unit costs are a portion of the 3900 outputs of the variable operating cost component of the program.[2]

Q. Did you make any adjustments to these costs?

A. Since these unit costs are representative of the average through and way trains which comprise railroad service, I had to adjust these costs to reflect the costs of unit trains for the specific coal movement described above. I did this adjustment using a Packard HP-97 programmable calculator.

Q. Please describe how you used this program to determine these costs.

A. The program required various statistical inputs such as the annual net tons to be transported, the net tons per car to be transported, and the number of cars per train. Given this information, the program then calculates the annual cars required for each movement and the number of train movements necessary each year.

1/ This computer program is described in detail in "Explanation of Automatic Data Processing Procedure of Rail Form A", ICC Stm. 1E2-73.

2/ The large number of outputs allows the computer process to be checked and adjusted manually.

Q. How does the computer program do that?

A. The program calculates annual, or aggregate, statistics, such as annual tons. Then the computer calculates the variable operating costs which are related to each of those aggregate statistics, such as the direct variable costs associated with the number of tons of coal being transported annually.

The computer program also includes other relevant costs. To facilitate an accurate analysis, the program separates expenses, such as those related to loss and damage claims, from returns to the company on its undepreciated investments in buildings and facilities devoted to the handling of loss and damage claims. This separation of expenses from capital charges also allows each amount to be treated differently if necessary in order to achieve an accurate reflection of the variable operating costs of a specific coal movement. For example, expenses as described above are subject to the 1.08 escalation factor which reflects the decline in money value between mid-1977 and mid-1978. Returns to the company, however, need not be similarly adjusted.

Q. What other functions can the program perform?

A. The program can increase the line haul costs to reflect the small amounts of non-revenue traffic that must be carried. It also can adjust for the non-productive engine minutes required for such activities as lunch hours or refueling which must be added to the observed engine times in productive work, and it can adjust for station clerical (waybilling) costs.[3/] The program then translates these aggregate costs to a cost per car. Costs per car then are totalled to produce a total cost per car.

Q. Did you adjust any cost elements of the unit train? If so, what adjustments did you make and for what purposes did you make such adjustments?

A. The most recent ICC statement on the inflationary trend of railroad costs (ICC Statement IE3-78, Appendix A, Column 3B, Line 12) indicates that the western district railroad costs went up 18.2% in the 27 months from mid-1975 to October, 1977. This inflation amounts

3/ These latter adjustments were based on the findings of the ICC as set forth in Ex Parte 270 (Sub-No. 4), Investigation of Railroad Freight Rate Structure - Coal, served March 14, 1975.

to 8% per year. Therefore, as my calculations in Exhibit 1 demonstrate, I increased my 1977 data by 8% to update them to mid-1978. This adjustment probably understates the inflationary increase of recent months, but it will be some time before we have more recent figures.

Q. What other significant data did you use and from what source did you obtain them?

A. The testimony of witness Bardwell describes in detail how various data concerning such considerations as net car loads, tares, and numbers of locomotives and cars per train were gathered. On the basis of these data, the program was able to calculate the number of cars and locomotives which would be required for each unit train. The program then could calculate such annual aggregate statistics as the train miles and the gross ton miles.

Q. Why input such information into a computer program?

A. A computer is a highly efficient tool for isolating, measuring and adjusting any cost element of an unit coal train in order to achieve the greatest accuracy possible.

Q. Did you consult any other source for data used in your calculations?

A. No, I believe I have summarized accurately the sources of my information. These data were utilized in the Standard Rail Form A procedure. Of course, my work papers are available for inspection at my office at any time during normal working hours.

Q. Would you please describe the exhibits which accompany your testimony?

A. There are three exhibits following my testimony. The first exhibit (Exhibit 1) shows the adjustment for inflation which I made to the data inputs. The second exhibit (Exhibit 2) shows the data which I fed into the

HP-97 calculator. Exhibit 2 consists of 4 pages which are numbered 2A through 2D. Each page of Exhibit 2 sets forth the cost data and statistical information applicable to each of the railroads which are involved in the coal movement described above. The third exhibit shows the data outputs produced by the calculator.

The source of the statistical information on Exhibit 2 was the Annual Report Form A (now called Form R-1) which the AT&SF, the BN, the CS and the FW&D Railroads filed with the Commission in 1977. The source of the unit cost information is indicated on the exhibit itself in the last column to the right labelled "Source".

Exhibit 3 shows the data outputs. The data are expressed first in unit costs per ton and then in unit costs per rail car. All cumulative costs appear at the bottom of the page.

U.S.D.O.E.
EXHIBIT NO. 1
WITNESS WILLIAMS

(1)	Ratio - 10/15/77 ÷ Yr. 1975 (ICC-1E3-78, Appendix A, Line 12, Column 3B)	.182
(2)	Months	27.0
(3)	Increase/Month(#1 ÷ #2)	.00674
(4)	Months to 7/1/78	12.0
(5)	Increase to 7/1/78 from Mid-1977 (#3 ÷ #4)	.08089

BN Railroad

Register Location	Name of Statistic	Statistic Amount	Unit Cost Amount	Name of Unit Cost	Source*
0	Ratio Total/Revenue Line Haul Miles	.9717			
1	Individual RR Car Days Incl. B.O.	2.98	$ .0041	L.D. Claims/Ton	Dkt. 36579
2	Locomotive Units/Train	5.0	.01172	L.D. Clerical/Ton - Expense	RFA B-9.28
3	Annual Net Tons (Thous.)	444.0	.0002	L.D. Clerical/Ton - Return	RFA B-10.28
4	Net Tons/Car	105.0	8.8524	Station Clerical/Car - Expense	RFA B-9.14
5	Tare Tons/Car	26.0	.13403	Station Clerical/Car - Return	RFA B-10.14
6	Average Loco Helper Units	4.0	4.7237	Terminal Train Supplies & Exp.	RFA B-9.25
7			19.53	Car-Day Exp. Incl. G.O.H.	SPX Study
8	Caboose Tare Tons	25.0	4.79	Car-Day Return Incl. G.O.H.	SPX Study
9	Ratio Empty/Loaded L.H. Miles	1.0	.0312	Car-Mile Expense	SPX Study
10	Ratio Commod./Avg. Sta. Clerical	.47	.005374	Running Train Supplies & Exp.	RFA B-9.24
11	Yard Engine Minutes/Train Mile	.137	.0086	Inspection Expense	RFA B-9.33
12	Helper Hours Chargeable/Train Mvt.	4.0	3.8041	Thru Train Wages	RFA B-16.9
13	L.H. Loaded Car Miles/Car	506.0	1.0487	Thru Train Other-Expenses	RFA B-15.9
14	Annual Train Mvts. (Calc'd by Pgm.)		.00322	Thru Train Other-Return	RFA B-10.10 and 11.10
15	L.H. Helper Miles (one direction)	13.0	.00162	Gross Ton Mile - Expense	RFA B-9.7
16	Loaded Cars/Train Excl. Caboose	110.0	.00009	Gross Ton Mile - Return	RFA B-10.7 and 11.7
17	Ratio Total/Prod. Yard Time	1.15			
18	Total Mvt. Car Days/Car Incl. B.O.	9.5			
1			1.0151	Reg. Loco Unit-Mile - Expense	RFA B-9.5
2			.03209	Reg. Loco Unit-Mile - Return	RFA B-10.5 and 11.5
3			1.0151	Helper Loco Unit-Mile - Expense	RFA B-9.6
4			.03209	Helper Loco Unit-Mile - Return	RFA B-10.5 and 11.5
5			15.00	Helper Hourly Cost - Expense	(Est.)
6			3.00	Helper Hourly Cost - Return	(Est.)
7			1.6806	Yard and Train Switching - Exp.	RFA B-9.36
8			.03359	Yard and Train Switching - Ret.	RFA B-10.36 and 11.36
9					
A	Ratio Updated/Actual Expense	1.00			
B	Ratio Adj'd/ICC Capital Return	1.0			

* Rail Form A locations in this column, e.g. "B-9.28" read "Schedule B, Line 9, Column 28."

U.S.D.O.E.
EXHIBIT NO. 2A
WITNESSES WILLIAMS

CS Railroad

Register Location	Name of Statistic	Statistic Amount	Unit Cost Amount	Name of Unit Cost	Source *
0	Ratio Total/Revenue Line Haul Miles	.99917			
1	Individual RR Car Days Incl. B.O.	1.75	$ .0041	L.D. Claims/Ton	Dkt. 36579
2	Locomotive Units/Train	7.0	0.0	L.D. Clerical/Ton - Expense	RFA B-9.28
3	Annual Net Tons (Thous.)	444.0	0.0	L.D. Clerical/Ton - Return	RFA B-10.28
4	Net Tons/Car	105.0	0.0	Station Clerical/Car - Expense	RFA B-9.14
5	Tare Tons/Car	26.0	0.0	Station Clerical/Car - Return	RFA B-10.14
6	Average Loco Helper Units	0.0	0.0	Terminal Train Supplies & Exp.	RFA B-9.25
7			19.53	Car-Day Exp. Incl. G.O.H.	SPX Study
8	Caboose Tare Tons	25.0	4.79	Car-Day Return Incl. G.O.H.	SPX Study
9	Ratio Empty/Loaded L.H. Miles	1.0	.0312	Car-Mile Expense	SPX Study
10	Ratio Commod./Avg. Sta. Clerical	.47	.002777	Running Train Supplies & Exp.	RFA B-9.24
11	Yard Engine Minutes/Train Mile	.137	.01003	Inspection Expense	RFA B-9.33
12	Helper Hours Chargeable/Train Hvt.	0.0	3.0033	Thru Train Wages	RFA B-16.9
13	L.H. Loaded Car Miles/Car	348.0	.8147	Thru Train Other-Expenses	RFA B-15.9
14	Annual Train Hvts. (Calc'd by Pgm.)		.00436	Thru Train Other-Return	RFA B-10.10 and 11.10
15	L.H. Helper Miles (one direction)	0.0	.001806	Gross Ton Mile - Expense	RFA B-9.7
16	Loaded Cars/Train Excl. Caboose	110.0	.00001	Gross Ton Mile - Return	RFA B-10.7 and 11.7
17	Ratio Total/Prod. Yard Time	1.15			
18	Total Hvt. Car Days/Car Incl. B.O.	9.5			
1			.5971	Reg. Loco Unit-Mile - Expense	RFA B-9.5
2			.2203	Reg. Loco Unit-Mile - Return	RFA B-10.5 and 11.5
3			.5971	Helper Loco Unit-Mile - Expense	RFA B-9.6
4			.2203	Helper Loco Unit-Mile - Return	RFA B-10.5 and 11.5
5			15.00	Helper Hourly Cost - Expense	(Est.)
6			3.00	Helper Hourly Cost - Return	(Est.)
7			1.49132	Yard and Train Switching - Exp.	RFA B-9.36
8			.027163	Yard and Train Switching - Ret.	RFA B-10.36 and 11.36
9					
A	Ratio Updated/Actual Expense	1.08			
B	Ratio Adj'd/ICC Capital Return	1.0			

* Rail Form A locations in this column, e.g. "B-9.28" read "Schedule B, Line 9, Column 28."

U.S.D.O.E.
Exhibit No. 2B
Witness Williams

FW&D Railroad

Register Location	Name of Statistic	Statistic Amount	Unit Cost Amount	Name of Unit Cost	Source*
0	Ratio Total/Revenue Line Haul Miles	.9985			
1	Individual RR Car Days Incl. B.O.	2.37	$ .0041	L.D. Claims/Ton	Dkt. 36579
2	Locomotive Units/Train	6.0	0.0	L.D. Clerical/Ton - Expense	RFA B-9.28
3	Annual Net Tons (Thous.)	444.0	0.0	L.D. Clerical/Ton - Return	RFA B-10.28
4	Net Tons/Car	105.0	0.0	Station Clerical/Car - Expense	RFA B-9.14
5	Tare Tons/Car	26.0	0.0	Station Clerical/Car - Return	RFA B-10.14
6	Average Loco Helper Units	0.0	0.0	Terminal Train Supplies & Exp.	RFA B-9.25
7			19.53	Car-Day Exp. Incl. G.O.H.	SPX Study
8	Caboose Tare Tons	25.0	4.79	Car-Day Return Incl. G.O.H.	SPX Study
9	Ratio Empty/Loaded L.H. Miles	1.0	.0312	Car-Mile Expense	SPX Study
10	Ratio Commod./Avg. Sta. Clerical	.47	.00464	Running Train Supplies & Exp.	RFA B-9.24
11	Yard Engine Minutes/Train Mile	.137	.00428	Inspection Expense	RFA B-9.33
12	Helper Hours Chargeable/Train Mvt.	0.0	3.3415	Thru Train Wages	RFA B-16.9
13	L.H. Loaded Car Miles/Car	453.0	.01431	Thru Train Other-Expenses	RFA B-15.9
14	Annual Train Mvts. (Calc'd by Pgm.)		.00449	Thru Train Other-Return	RFA B-10.10 and 11.10
15	L.H. Helper Miles (one direction)	0.0	.001795	Gross Ton Mile - Expense	RFA B-9.7
16	Loaded Cars/Train Excl. Caboose	110.0	.00011	Gross Ton Mile - Return	RFA B-10.7 and 11.7
17	Ratio Total/Prod. Yard Time	1.15			
18	Total Mvt. Car Days/Car Incl. B.O.	9.5			
1			.8542	Reg. Loco Unit-Mile - Expense	RFA B-9.5
2			.00547	Reg. Loco Unit-Mile - Return	RFA B-10.5 and 11.5
3			.8542	Helper Loco Unit-Mile - Expense	RFA B-9.6
4			.0055	Helper Loco Unit-Mile - Return	RFA B-10.5 and 11.5
5			15.00	Helper Hourly Cost - Expense	(Est.)
6			3.00	Helper Hourly Cost - Return	(Est.)
7			1.34402	Yard and Train Switching - Exp.	RFA B-9.36
8			.03205	Yard and Train Switching - Ret.	RFA B-10.36 and 11.36
9					
A	Ratio Updated/Actual Expense	1.08			
B	Ratio Adj'd/ICC Capital Return	1.0			

* Rail Form A locations in this column, e.g. "B-9.28" read "Schedule B, Line 9, Column 28."

U.S.D.O.E.
EXHIBIT NO. 2C
WITNESS WILLIAMS

AT&SF Railroad

Register Location	Name of Statistic	Statistic Amount	Unit Cost Amount	Name of Unit Cost	Source *
0	Ratio Total/Revenue Line Haul Miles	.9737			
1	Individual RR Car Days Incl. B.O.	2.4	$ .0041	L.D. Claims/Ton	Dkt. 36579
2	Locomotive Units/Train	5.0	.01158	L.D. Clerical/Ton - Expense	RFA B-9.28
3	Annual Net Tons (Thous.)	444.0	.00048	L.D. Clerical/Ton - Return	RFA B-10.28
4	Net Tons/Car	105.0	7.8956	Station Clerical/Car - Expense	RFA B-9.14
5	Tare Tons/Car	26.0	.29433	Station Clerical/Car - Return	RFA B-10.14
6	Average Loco Helper Units	0.0	6.418	Terminal Train Supplies & Exp.	RFA B-9.25
7			19.53	Car-Day Exp. Incl. G.O.H.	SPX Study
8	Caboose Tare Tons	25.0	4.79	Car-Day Return Incl. G.O.H.	SPX Study
9	Ratio Empty/Loaded L.H. Miles	1.0	.0312	Car-Mile Expense	SPX Study
10	Ratio Commod./Avg. Sta. Clerical	.47	.00616	Running Train Supplies & Exp.	RFA B-9.24
11	Yard Engine Minutes/Train Mile	.137	.00797	Inspection Expense	RFA B-9.33
12	Helper Hours Chargeable/Train Mvt.	0.0	4.0612	Thru Train Wages	RFA B-16.9
13	L.H. Loaded Car Miles/Car	299.0	.84461	Thru Train Other-Expenses	RFA B-15.9
14	Annual Train Mvts. (Calc'd by Pgm.)		.00625	Thru Train Other-Return	RFA B-10.10 and 11.10
15	L.H. Helper Miles (one direction)	0.0	.001888	Gross Ton Mile - Expense	RFA B-9.7
16	Loaded Cars/Train Excl. Caboose	110.0	.00016	Gross Ton Mile - Return	RFA B-10.7 and 11.7
17	Ratio Total/Prod. Yard Time	1.15			
18	Total Mvt. Car Days/Car Incl. B.O.	9.5			
1			.88488	Reg. Loco Unit-Mile - Expense	RFA B-9.5
2			.12985	Reg. Loco Unit-Mile - Return	RFA B-10.5 and 11.5
3			.88488	Helper Loco Unit-Mile - Expense	RFA B-9.6
4			.1299	Helper Loco Unit-Mile - Return	RFA B-10.5 and 11.5
5			15.00	Helper Hourly Cost - Expense	(Est.)
6			3.00	Helper Hourly Cost - Return	(Est.)
7			1.4551	Yard and Train Switching - Exp.	RFA B-9.36
8			.07653	Yard and Train Switching - Ret.	RFA B-10.36 and 11.36
9					
A	Ratio Updated/Actual Expense	1.08			
B	Ratio Adj'd/ICC Capital Return	1.0			

* Rail Form A locations in this column, e.g. "B-9.28" read "Schedule B, Line 9, Column 28."

U.S.D.O.E.
EXHIBIT NO. 2D
WITNESS WILLIAMS

This program, using inputs shown on Exhibit 2, calculates aggregate service units, updates expenses and returns on investments, adjusts line haul non-revenue, station clerical by commodity, switching non-productive time and halves loss and damage claims (O&T portions). Outputs are as follows:

A AGGREGATE SERVICE UNITS (Names in caps, figures with no decimal places).

B Unit Costs Associated With Each Service Unit (Figures decimalled in Dollars with seven decimal places).

C Variable Costs Per Car (Figures decimalled in Dollars with Two decimal places).

D CUMULATIVE COSTS PER CAR AND PER TON

	B.N.	C.SS.	F.W.&O.	A.T.&S.F.	TOTAL
1. AGGREGATE TONS	444000	444000	444000	444000	
2. Loss & Damage Claims	.0041000	0	0	.0041000	
	0.46	0	0	0.46	
3. Loss & Damage Clerical - Expense	.0017200	0	0	.0115800	
	1.33	0	0	1.31	
4. Loss & Damage Clerical - Return	.0002000	0	0	.0004800	
	0.02	0	0	0.05	
5. AGGREGATE CARS	4229	4229	4229	4229	
6. Station Clerical - Expense	8.8524000	0	0	7.8956000	
	4.49	0	0	4.01	
7. Station Clerical - Return	.1348300	0	0	.2943300	
	0.06	0	0	0.14	
8. Train Supplies & Expenses - Expense	4.7237000	0	0	6.4180000	
	5.10	0	0	6.93	
9. AGGREGATE CAR-DAYS ON RAILROAD	12601	7400	10022	10144	
10. Time-Related Car Costs - Expense	19.5300000	19.5300000	19.5300000	19.5300000	
	62.86	36.91	45.99	50.62	
11. Time-Related Car Costs - Return	4.7900000	4.7900000	4.7900000	4.7900000	
	14.27	8.38	11.35	11.50	
12. AGGREGATE LINE HAUL CAR-MILES	4279314	2943086	3831086	2528856	
13. Distance-Related Car Costs - Expense	.0312000	.0312000	.0312000	.0312000	
	34.10	23.45	30.53	20.15	
14. Train Supplies & Expenses - Expense	.0053740	.0027770	.0046400	.0061600	
	5.87	2.09	4.54	3.98	
15. Car Inspection	.0086000	.0100340	.0042800	.0079700	
	9.40	7.54	4.19	5.15	
16. AGGREGATE LOADED TRAINS	38	38	38	38	
17. AGGREGATE CAR-DAYS/CAR EXCLUDING BAD ORDER	361	361	361	361	
18. AGGREGATE TRAIN MILES	38456	26448	34428	22734	
19. Train Wages - Expense	3.8041000	3.0033000	3.3415000	4.0612000	
	38.45	20.30	29.43	24.21	
20. Train Other - Expense	1.0487000	.8147000	.8143100	.8446100	
	10.60	5.51	7.17	5.03	
21. Train Other - Return	.0032200	.0043600	.0044900	.0062500	
	0.03	0.03	0.04	0.03	
22. AGGREGATE GROSS TON MILES OF CARS & CONTS.	335926172	231032229	300740229	198501829	
23. Unit Cost - Expense	.0016200	.0018060	.0017950	.0018280	
	143.04	106.65	138.08	98.30	
24. Unit Cost - Return	.0000900	.0000100	.0001100	.0001600	
	7.36	.55	7.84	7.71	
25. AGGREGATE REGULAR LOCOMOTIVE UNIT MILES	192290	185136	206568	113620	
26. Unit Cost - Expense	1.0151000	.5971000	.8542000	.8258800	
	51.30	28.26	45.13	26.37	
27. Unit Cost - Return	.0320900	.2203000	.0054700	.1299500	
	1.50	9.65	0.27	3.58	
28. AGGREGATE HELPER LOCOMOTIVE UNIT MILES	3952	0	0	0	
29. Unit Cost Expense	1.0151000	.5971000	.8542000	.8248800	
	1.05	0	0	0	
30. Unit Cost Return	.0321000	.2203000	.0055000	.1299000	
	0.03	0	0	0	
31. AGGREGATE HELPER HOURS	152	0	0	0	
32. Unit Cost - Expense	15.0000000	15.0000000	15.0000000	15.0000000	
	0.60	0	0	0	
33. Unit Cost - Return	3.0000000	3.0000000	3.0000000	3.0000000	
	0.11	0	0	0	
34. AGGREGATE YARD ENGINE MINUTES	5268	3623	4717	3111	
35. Unit Cost - Expense	1.6806000	1.4910000	1.3440000	1.4581000	
	2.60	1.59	1.66	1.33	
36. Unit Cost - Return	.0335900	.0271610	.0325500	.0765800	
	0.05	.03	.04	.06	
37. COST PER LOADED CAR	394.70	250.94	330.45	270.61	[illegible]
38. COST PER NET TON	3.76	2.38	3.15	2.66	[illegible]
39. COST PER LOADED CAR EXCL. CAR COSTS	293.47	182.20	235.58	169.67	[illegible]
40. COST PER NET TON EXCL. CAR COSTS	2.70	1.71	2.27	1.80	[illegible]

VERIFICATION

DISTRICT OF)
) SS
COLUMBIA)

HARTER WILLIAMS, being duly sworn, deposes and says that he has read the foregoing statement, knows the facts asserted therein, and that the same are true as stated.

Harter W. Williams
HARTER WILLIAMS

Subscribed and sworn to
before me this 2nd day
of August 1978

Janice L. Veligh
Notary Public

My Commission Expires Jan. 14, 1981

CERTIFICATE OF SERVICE

I certify that I have this day, or on the day following immediately hereafter, served by first-class mail the foregoing document upon all parties of record in this proceeding.

Dated at Washington, D.C. this 4th day of August, 1978.

Vera E. Vaughns
Vera E. Vaughns