

**PIPELINE SAFETY AND THE IMPACT OF THE  
KINDER MORGAN PIPELINE ACCIDENT ON  
SAFETY, FUEL POWER, AND CONSUMER COST**

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**FIELD HEARING**

BEFORE THE

**COMMITTEE ON COMMERCE,  
SCIENCE, AND TRANSPORTATION  
UNITED STATES SENATE**

**ONE HUNDRED EIGHTH CONGRESS**

**FIRST SESSION**

**OCTOBER 9, 2003**

Printed for the use of the Committee on Commerce, Science, and Transportation



U.S. GOVERNMENT PUBLISHING OFFICE

20-974 PDF

WASHINGTON : 2016

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SENATE COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION

ONE HUNDRED EIGHTH CONGRESS

FIRST SESSION

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# **PIPELINE SAFETY AND THE IMPACT OF THE KINDER MORGAN PIPELINE ACCIDENT ON SAFETY, FUEL POWER, AND CONSUMER COST**

**THURSDAY, OCTOBER 9, 2003**

U.S. SENATE,  
COMMITTEE ON COMMERCE, SCIENCE, AND TRANSPORTATION,  
*Phoenix, AZ.*

The Committee met, pursuant to notice, at 9:01 a.m. in City Hall, City Council Chambers, 200 West Washington Street, Phoenix, Arizona, Hon. John McCain, Chairman of the Committee, presiding.

## **OPENING STATEMENT OF HON. JOHN MCCAIN, U.S. SENATOR FROM ARIZONA**

The CHAIRMAN. Good morning. I'd like to begin this field hearing of the Senate Committee on Commerce, Science, and Transportation. Today we meet to consider issues related to pipeline safety, specifically the Kinder Morgan pipeline rupture and its impact on public safety, fuel supply, and gasoline prices.

During the past several years I've chaired a number of hearings on pipeline safety. Last December, after three long years of debate, Congress passed legislation to reauthorize and strengthen Federal pipeline safety programs. While pipelines have historically been the safest way to transport fuel, serious and often preventable pipeline accidents with devastating consequences make clear that more still needs to be done to make them safer.

The law enacted last year imposed many new mandates intended to improve pipeline safety and required every pipeline operator to develop comprehensive integrity management plans, imposed mandatory inspections and requirements, required operators to help educate the public about pipeline safety, and established whistleblower protections for pipeline employees. Enacting laws, however, is not in and of itself a solution to pipeline safety problems. Strong, swift, and consistent enforcement is also essential. It's unfortunate but true that it often takes a crisis to focus public interest on an issue.

While the Kinder Morgan rupture thankfully did not result in any deaths or personal injuries, its economic consequences, compounded by many factors, including an understandable public run on gas stations and alleged price gouging, were dramatic. The rupture and subsequent shutdown of the pipeline for 16 days affected millions of Arizona residents and businesses, some of whom if they

could find a station with fuel and had hours to spare waiting in line, paid over \$4 for a gallon of gasoline.

The Kinder Morgan rupture has been a wake-up call for many, including Kinder Morgan. The company's pipelines that run through Arizona are nearly 50 years old and its line from El Paso supplies about one-third of Phoenix's gasoline. The rupture has raised serious questions about the condition of Kinder Morgan's pipelines, our state's dependence on that company to transport fuel, the adequacy of safety regulations and their enforcement by Federal and State agencies, and the extent to which these agencies do or do not work together.

Why, for example, did it take the Office of Pipeline Safety nearly a year to issue a compliance action order after receiving information from Kinder Morgan about serious external corrosion on its 6-inch jet fuel pipeline? Why, despite frequent inspections of Kinder Morgan's pipeline by the Arizona Corporation Commission and the identification of various "items of non-compliance" does their seem to have been little or no follow up in enforcement by OPS? Why is it that OPS' orders following the July 30 rupture imposed less stringent requirements on Kinder Morgan than the company ultimately took itself? And why did it take a rupture and loss of 10,000 gallons of fuel for Kinder Morgan to inspect and replace the pipeline instead of having taken action to identify the risks associated with this aging pipeline before an accident occurred?

The questions that have arisen from this incident suggest that delayed, lax, or worse, non-existent oversight and enforcement by OPS and a company that reacts to safety problems after they occur instead of taking actions to prevent them. I hope that at today's hearings we will get answers to these questions that either correct this impression of real problems with both the private and public sectors, or answers that inform us about what more needs to be done to ensure that an accident of this sort and consequence does not happen again.

Much of our Nation's energy infrastructure was built years ago in remote areas away from our population centers. The fact the Kinder Morgan rupture occurred in a housing development provides a good example of how the population centers have shifted, and highlights the problem of encroachment on pipeline rights of way. Clearly, we must ensure that local planning and zoning laws take into account public safety and the needs for such rights of way.

I look forward to hearing from our witnesses, getting their accounts of what went wrong and who was responsible, and receiving their recommendations on what more can be done to further strengthen pipeline safety and employment. Our first witnesses today, we're glad to welcome Janet Napolitano, Governor of the State of Arizona, and the Honorable Raul Grijalva, who is a Congressman from Arizona. Would you please both come forward? And we will begin with Governor Napolitano. Welcome, Governor. Welcome, Congressman Grijalva.

**STATEMENT OF JANET NAPOLITANO, GOVERNOR,  
STATE OF ARIZONA**

Governor NAPOLITANO. Thank you, Senator, and thank you for inviting me to testify today about pipeline safety and reliability. I commend the Committee for its attention to this important issue, and in particular I want to thank you, Senator, for your leadership, including your role in the recent passage of the Pipeline Safety Act for 2002.

Arizona has learned a lot about this issue since July 30 when the Kinder Morgan pipeline from Tucson to Phoenix ruptured. That rupture would splash over 10,000 gallons of gasoline on five newly constructed homes, exposed not only our state's vulnerability arising from its reliance on just two pipelines to supply gasoline for 5 million people, but also serious weaknesses in the Federal Government's investigations and enforcement of pipeline safety. My testimony today will focus on the latter issue.

In my investigations to date into the cause of the rupture and its effects of Arizona, I have been perhaps most disturbed by the recent discovery that State regulators acting on behalf of the Federal Office of Pipeline Safety discovered and reported numerous instances of general corrosion problems on Kinder Morgan's east line, but OPS took no effective action to address it.

As you may know, OPS contracts with certain State bodies, including the Arizona Corporation Commission, for inspections of the portions of interstate pipelines that run within a particular state. In the case of the Kinder Morgan east line, the Corporation Commission had inspected it no fewer than six times between 1996 and 2003. In every one of those inspections the Corporation Commission reported concerns about general corrosion along the line, including specific concerns about Kinder Morgan's failure to take adequate preventative maintenance measures.

In one October 2001 violation report, the inspector warned that "this pipeline has been in service for 50 years and has no coating problems." The inspector went on to say that lack of maintenance could ultimately result in "pipeline failure, resulting in a loss of product, possible injury, loss of life, and severe damage to property and the environment."

Unfortunately, although OPS contracts out its investigative authority, it gives the Corporation Commission virtually no enforcement authority, and as a result, despite its findings and recommendations for compliance and corrective action, the Corporation Commission was powerless to effectively correct the situation.

The problem was exacerbated by the fact that OPS itself brought only two enforcement actions in response to the Corporation Commission's reports and never sought a penalty of greater than \$40,000 against the multi-million dollar carrier. This, coupled with the fact that Kinder Morgan had not inspected the portion of the line where the rupture occurred since 1996, despite the pipeline's age, contributed to the pipeline's failure.

Kinder Morgan asserts that the July 30 rupture was caused by stress corrosion cracking as opposed to general corrosion reported each year by the Corporation Commission. Nevertheless, I can't help but think that at a minimum more aggressive enforcement by OPS would have fostered a more vigilant pipeline safety assess-

ment by Kinder Morgan that could have averted the July 30 rupture.

We must have more effective pipeline safety. If states are to be given investigative authority over the portions of interstate lines that cross their jurisdiction, they must also be given both the authority and resources necessary to enforce their findings and recommendations. In Arizona, we are willing to take the responsibility of enforcing pipeline safety, but we need the Federal funding and authority to do so effectively.

I urge the Committee to reform the Federal pipeline safety laws in a manner that delegates both investigative and enforcement authority to states that are willing to undertake it and fully funds their ability to do so effectively. While we're on the subject of reform, I offer another thought. Does it still make sense to house the Office of Pipeline Safety within the Department of Transportation? Today critical energy infrastructure is a homeland security concern. Disruptions like the one we had here can bring our economy to a standstill, but more important, given the volume of fuel that flows through these lines, such ruptures are probably a significant risk to the safety of our citizens and environment. At a minimum, State and Federal Homeland Security officials must be much more knowledgeable about pipeline routes, security procedures, and threats. Operators of these lines should know how to reach relevant Homeland Security personnel 24 hours a day and should be required to report all ruptures and known threats immediately.

By way of example, on August 8, 2003, when Kinder Morgan decided to shut down the east line completely, it notified only our State's Corporation Commission and the Department of Weights and Measures. They did not notify the Governor nor the Office of Homeland Security. I have since given Kinder Morgan numbers where they can reach my staff and our Director of Homeland Security 7 days a week on a 24-hour basis. Ultimately, I believe Congress should seriously consider moving OPS to the Federal Department of Homeland Security so that pipeline safety issues can be assessed at the outset from a public safety perspective.

Finally, I'd like to address some actions that Arizona is taking on this issue. In the aftermath of the Kinder Morgan rupture, I have appointed a task force led by former Tosco CEO Robert Lavinia to review the July 30 rupture, recommend measures to prevent such occurrences in the future, and address Arizona's vulnerability to similar supply disruptions. I look forward to receiving the Lavinia Group's report and I am pleased to make it available to this Committee upon its completion.

Arizona was lucky no one was injured in the July 30 rupture. Nonetheless, the rupture justifiably alarmed a number of homeowners who live near the pipeline or send their kids to schools on the pipeline's right of way. In several instances, these homeowners never knew their property abutted the pipeline. For this reason, I have asked our Real Estate Commission to investigate whether developers of property near the pipeline had given adequate notice to purchasers of the location of the pipeline.

Given the growth of communities, as you noted, through the country since the date many active pipelines were first installed, I would urge this committee to take similar reviews of the require-



ments for and enforcement of notification requirements to owners and new buyers of property located near pipelines.

Last, the Arizona Department of Environmental Quality has issued a notice of violation to Kinder Morgan arising out of the rupture, including the proposed assessment of the maximum civil environmental penalty allowed by Arizona law. The Department's investigation of the July 30 rupture is continuing and will proceed until the Department is satisfied with Kinder Morgan that Kinder Morgan is in full compliance with the State's environmental laws.

Again, we have learned a lot about this subject since July 30. I promise the people of Arizona that I will do all I can to help prevent a repeat of what happened here this summer. I'm grateful the Committee is taking up this issue and for the opportunity to share with you my ideas for what the Federal Government can do to improve pipeline safety. Thank you.

The CHAIRMAN. Thank you very much, Governor. Congressman Grijalva, welcome.

**STATEMENT OF HON. RAÚL GRIJALVA,  
U.S. REPRESENTATIVE FROM ARIZONA**

Mr. GRIJALVA. Thank you, sir. Thank you, Senator McCain, and the Committee for holding this very important hearing and for the opportunity to provide some testimony to your Committee. I think this hearing on Kinder Morgan is very important.

The gasoline rupture occurred in Tucson on July 30, and one of the things I'd like to do, Senator, is respectfully request the Committee hold a hearing in Tucson where the pipeline rupture occurred as soon as possible. While Phoenix-area residents were inconvenienced, potentially gouged in terms of the price of gas and the economic impact statewide, the constituents that I represent in that area were subjected to serious environmental health and safety dangers as a result of the pipeline rupture, and now we face we must endure the reconstruction and/or realignment of the pipeline.

And as you stated and as the Governor eloquently stated, I also am extremely concerned with the lack of diligent oversight by Federal agencies who are tasked with the monitoring, the safety, and security of gasoline pipelines and all other energy infrastructure in this country. These responsible agencies with jurisdiction in this matter quite frankly have failed to ensure the safety of citizens in the area, along with security of gasoline supply.

Neither the public nor elected officials knew the extent of safety risks associated with the pipeline. Our preliminary information indicates the pipeline may have failed safety inspections as far back as 1995 and then on. However, this information was not made public nor made available to elected officials or emergency personnel. Thankfully, no one was injured during the rupture in July. However, many residents had their lives seriously disrupted. The consequences of this event are still ripping through our community and will no doubt be an issue of great concern for a long time to come.

Now that the current immediate danger has passed, plans for reconstruction or realignment of the pipeline are beginning to formulate. Recently the Tucson City Council was presented with two options for the pipeline: allowing Kinder Morgan to repair the line in

its existing locale, or instead realign the pipeline to another route. The Tucson city council voted to allow reconstruction of the pipeline in the existing right of way with slight modifications. While under some circumstances this option may have seemed like the logical choice, reconstruction along the existing right of way is far from a positive solution to the problem.

The existing pipeline passes close to parks, residences, hospitals, schools, and potentially endangering the safety of citizens. All told, it runs through 60 residential subdivisions, affecting 782 individual residences, eight parks, four schools, and seven public facilities. In addition, the right-of-way passes through the area of Tumamoc Hill. Tumamoc Hill is a highly valued and extremely important research area for the University of Arizona, who has conducted research on the hill for over 100 years.

Using the existing right of way will perpetuate a dangerous situation for area residents and visitors. It will cause new disturbance on Tumamoc Hill because the old pipeline will have to be abandoned and a new trench dug to accommodate a larger pipe. The alternative for alignment, which was presented to the Tucson city council is unfortunately not much of an improvement to the existing route. The realignment proposal would also put the gasoline pipeline in close proximity to schools, homes, and public facilities.

Kinder Morgan and the agencies involved have indicated that only two options are available for the location of the pipeline, but I do not believe adequate effort have been expended to determine a safe and environmentally responsible location for the pipeline. The community is now faced with a no-win situation, because both options have the adverse impacts on the community and on the natural resources of the area. Because neither of the proposed routes is a tenable solution, the community must be given a broader range of options. Kinder Morgan and the agencies involved in this issue should look again and look more closely this time to determine the safest location for both human health and the environment.

Senator, I would strongly urge the agencies to initiate a broad public process that would take the community's interests and concerns into account and would closely examine the possible public health and environmental impacts on the pipeline's reconstruction wherever it occurs. A variety of alternatives should be proposed that would address the health and safety and environmental concerns associated with this project.

It is a difficult issue and I have tried to narrow my testimony, sir, on the after-the-fact situation. As you stated in your opening comments, it's only in a crisis that makes people focus on the situation, and now I've narrowed the focus in this testimony to look at the realignment and/or relocation of this pipeline. It is of great concern to the people in Tucson, those both directly affected by the present alignment or any future alignments.

I want to thank you for holding this hearing. It's very important to the people of the state and certainly to the people of my district, and I offer the support and assistance of myself and my staff, who is available to work with your office and all affected and interested parties. And again, my thanks for allowing me the time to present this testimony, Senator. Thank you.

[The prepared statement of Hon. Grijalva follows:]

PREPARED STATEMENT OF HON. RAÚL M. GRIJALVA,  
U.S. REPRESENTATIVE FROM ARIZONA

Thank you for holding a hearing on the Kinder Morgan gasoline pipeline rupture that occurred in Tucson on July 30. Thank you for allowing me to speak at the hearing and I submit this written statement on the record.

I request that the Senate Committee on Commerce, Science, and Transportation hold a hearing in Tucson, where the pipeline rupture occurred, as soon as possible. While Phoenix residents were inconvenienced by long lines at gas stations, my constituents have been subjected to serious environmental, health and safety dangers as a result of the pipeline rupture, and now must endure reconstruction and/or realignment.

I am extremely concerned with the lack of diligent oversight by Federal agencies who are tasked with monitoring safety and security of gasoline pipelines and other energy infrastructure in this country. I admonish all responsible agencies with jurisdiction in this matter who should have been examining the line to ensure the safety of the citizens of the area, along with the security of the gasoline supply.

Neither the public nor elected officials knew the extent of the safety risks associated with the pipeline. Our preliminary information indicates that the pipeline may have failed safety inspections from 1995 on, however, this information was not made public, nor made available to elected officials or emergency personnel.

Thankfully, no one was injured during the rupture in July; however, many residents had their lives seriously disrupted. The consequences of this event are still rippling through our community, and will no doubt be an issue of grave concern for a long time to come.

Now that the current immediate danger has passed, plans for reconstruction or realignment of the pipeline are beginning to formulate. Recently, the Tucson City Council was presented with two options for the pipeline: allowing Kinder Morgan to repair the line in its existing locale, or instead realign the pipeline to another route. The Tucson City Council voted to allow reconstruction of the pipeline in the existing right of way with slight modifications. While under some circumstances, this option may have seemed like a logical choice, the reconstruction along the existing right of way is far from a positive solution to the problem.

The existing pipeline route passes close to parks, residences, hospitals and schools, endangering the safety of citizens. All told it runs through 60 residential subdivisions, affecting 782 individual residences, 8 parks, 4 schools, and 7 public buildings. In addition, the right of way passes through the area known as Tumamoc Hill. Tumamoc Hill is a highly valued and extremely important research area for the University of Arizona, who has conducted research on the hill for over a hundred years.

Using the existing right of way will perpetuate a dangerous situation for area residents and visitors, and will cause new disturbance on Tumamoc Hill because the old pipeline will have to be abandoned and a new trench dug to accommodate a larger pipe.

The alternative for alignment which was presented to the Tucson City Council is, unfortunately, not much of an improvement to the existing route. The realignment proposal would also put the gasoline pipeline in close proximity to schools, homes and public facilities.

Kinder Morgan and the agencies involved have indicated that only these two options are available for location of the pipeline, but I do not believe adequate effort has been expended to determine a safe and environmentally responsible location for the pipeline. The community is now faced with a no-win situation because both options will have the adverse impacts on the community and on the natural resources of the area.

Because neither of the two proposed routes is a tenable solution, the community must be given a broader range of options. Kinder Morgan and the agencies involved in this issue should look again, and look more closely this time, to determine the safest location for both human health and the environment.

I strongly urge the agencies to initiate a broad public process that would take the community's interests and concerns into account, and would closely examine the possible public health and environmental impacts of the pipeline's reconstruction, wherever this occurs. A variety of alternatives should be proposed that would address the health, safety and environmental concerns associated with this project.

Thank you for holding this hearing. I offer the support and assistance of myself and my staff who are available to work with the Senator's office in order to address this complex issue.

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CONGRESS OF THE UNITED STATES  
HOUSE OF REPRESENTATIVES  
*Washington, DC, October 8, 2003*

STACY GERARD,  
Administrator,  
Office of Pipeline Safety,  
Department of Transportation,  
Washington, DC.

Admiral JAMES M. LOY,  
Administrator,  
Transportation Security Administration,  
Department of Homeland Security,  
Arlington, VA.

RE: Kinder Morgan Pipeline Rupture

Dear Ms. Gerard and Admiral Loy:

I am writing to you with regard to the Kinder Morgan gasoline pipeline rupture that took place in Tucson, Arizona on July 30, 2003. This disaster is of extremely grave concern to me and to the constituents I represent in Arizona.

The pipeline rupture subjected my constituents to serious environmental, health and safety risks. Thankfully, no one was injured in the rupture. Now that the immediate danger of the rupture has passed, however, residents will have to endure the impacts of the pipeline's reconstruction and potential realignment.

Not only is this situation a danger to the health and safety of our citizens, it is also a tremendous risk to our country's security. When lines are not appropriately monitored for leaks, breakages, or weaknesses, it puts our citizens' lives at risk from potential accidents and from possible sabotage.

Neither the public nor elected officials knew the extent of the safety risks associated with the pipeline. Our preliminary information indicates that the pipeline may have failed safety inspections from 1995 on, however, this information was not made public, nor made available to elected officials or emergency personnel.

I am dismayed that your agencies, who have jurisdiction over this matter, did not ensure that monitoring was taking place, and that you did not act upon reports of unsafe conditions on the pipeline. Monitoring and reporting of any problems were absolutely crucial in order to ensure the safety of the residents who live along the pipeline's route, and the security of the pipeline itself. I believe this incident could have been prevented had your agencies been more diligent in their duties.

The two options that have been presented to the citizens and City Council of Tucson for reconstruction and/or realignment of the pipeline route are clearly inadequate. The existing route perpetuates a dangerous situation for area residents and will cause new disturbance on Tumamoc Hill, a unique and highly valued research area of the University of Arizona, because the old pipeline will have to be abandoned and a new trench dug to accommodate a larger pipe.

The alternative for alignment which was presented to, and subsequently rejected by, the Tucson City Council is, unfortunately, not much of an improvement to the existing route. The realignment proposal would also put the pipeline in close proximity to schools, homes and public facilities.

Kinder Morgan and your agencies have indicated that only these two options are available for location of the pipeline, but I do not believe adequate effort has been expended to determine a safe and environmentally responsible location for the pipeline. The community is now faced with a no-win situation because both options will have the adverse impacts on the community and on the natural resources of the area.

Because neither of the two proposed routes is a tenable solution, the community must be given a broader range of options. Your agencies have a responsibility to look again, and look more closely this time, to determine the safest location for both human health and the environment.

Your agencies must initiate a broad public process that would take the community's interests and concerns into account, and would closely examine the possible public health and environmental impacts of the pipeline's reconstruction, wherever this occurs. A variety of alternatives should be proposed that would address the health, safety and environmental concerns associated with this project.

I look forward to working with you and your designees on finding common ground on this issue.

Sincerely,

RAÚL M. GRIJALVA,  
*Member of Congress.*

cc: Norman Y. Mineta, Secretary of Transportation  
Tom Ridge, Secretary of Homeland Security

The CHAIRMAN. Thank you very much, Congressman Grijalva, and we appreciate your input on this issue of location of the pipelines, and maybe we could discuss that just for a second.

Governor, thank you for your recommendation of the shifting of the responsibility from OPS to Homeland Security. I think it's probably a very worthwhile consideration, not to mention that many view these pipelines as vulnerable to attacks from terrorists, and so perhaps it's something that should be given serious consideration and we'd suggest it.

Could we discuss just for a minute, Governor and Congressman, this issue of the location of pipelines? They've got to go somewhere, right? They have to go somewhere. Where should they go? Through the national forests, through the wilderness areas? It seems to me we've got a classic nimbi problem here, and it also seems to me then that the people who would probably make those decisions or have a significant voice in those decisions are the people who are directly responsible in many respects, *i.e.*, mayor and city council, county supervisors. What's your thoughts on that, Governor?

Governor NAPOLITANO. Senator McCain, two points. One is I agree with you this should be a matter within local control in terms of planning and zoning and also disclosure to property owners. But I think that underlying your question is the point that the pipelines have to go somewhere. They cross vast expanses of territory.

Given particularly the Western States and the growth of population, it is hard to conceive how they can get gasoline to where it needs to go without going near a population center and so forth, which is why it is so that then says why it is so important that there be very strict maintenance schedules, that there be very aggressive oversight, that there be back-up plans should there be a rupture, that there be availability to keep the community on notice at times when an accident does occur.

In other words, what I'm saying, Senator, is if the pipeline is to go where it will go, it will go near population centers, it will go near schools. If it is, that just increases the importance of effective oversight.

Mr. GRIJALVA. Sir, I would associate myself with the comments that the Governor just made. I think the issue is appropriately a local control issue and elected representatives of a community bear that responsibility and they should retain that responsibility. But in terms of the local issue, the request for all involved parties to fully involve the community in the disclosure and the discussion I think would help take and alleviate much of the concern and much of the doubt that exists right now, in the sense that everybody is getting the information and everybody feels that they're participating in that information.

Down the road there are some tough choices, and those choices are going to be made. Someone will be affected and impacted negatively, but the process is of great concern to me, and that is the more you leave people to advise their own conclusions as to what going on without having the direct input into it, the more this issue becomes divisive, and as it is now a great concern to the whole community. Maintenance, oversight, critical issues, and I would concur with the Governor that those have to be part of any long-term reform to this whole issue.

The CHAIRMAN. Thank you very much. Before you go, Governor, I know we're going to hear more about this issue from the Attorney General. Do you want to comment on the gas price issue? And in those comments, do you think we ought to change the definition of price gouging?

Governor NAPOLITANO. I think you have to have an effective definition of price gouging, and I draw a contrast between what happened after 9/11 and what happened after the Kinder Morgan shut-down. After 9/11, I was the Attorney General and there were reports of gouging in other States, and we received complaints in the Attorney General's office and we sent investigators out, and in fact we didn't find any gouging going on in Arizona, in contrast to what happened this summer. There definitely was gouging. Even at the most intense point of the crisis there was no economic justification for charging \$3.50 and \$4 a gallon for gasoline or requiring people in one instance, a car wash, gasoline station owner was requiring people to buy a \$10 car wash in order to fill their tank when it was raining, and taking advantage that the market was out of whack.

The CHAIRMAN. Doesn't that fit the definition then of gouging?

Governor NAPOLITANO. Well, Arizona does not have a gouging statute.

The CHAIRMAN. But, apparently it doesn't fit the FTC's definition either because there has to be some proof of collusion. Is that—

Governor NAPOLITANO. That's the way I understand it, Senator, and I think in Arizona, the Attorney General and I are working so we would have a state gouging law, which would be triggered by the Governor having to make certain findings, but then would give you the opportunity to go after those who are taking unfair advantage of a natural shortage of supply.

The CHAIRMAN. Well, again, I thank you. It just seems to me when there was, the instance you talked about that, I don't know why you would have to prove collusion. It just seems to me if it's a unreasonable pricing and unreasonable requirement such as getting a car wash that that in itself should be grounds for some kind of violation, but apparently that's not the case. And I'm sure we'll hear more from the Attorney General on this issue, but perhaps there needs to be some kind of change at the Federal level as well as at the State level.

Governor NAPOLITANO. We'll be happy to share with you our draft legislation.

The CHAIRMAN. Thank you very much. I thank you both for coming today and I appreciate you being here.

Mr. GRIJALVA. Thank you.

Governor NAPOLITANO. Thank you, Senator.

The CHAIRMAN. Our next panel is Mr. Samuel Bonasso, who is the Acting Administrator, Research and Special Programs Administration of the Department of Transportation. He'll be accompanied by Ms. Stacy Gerard, who is the Associate Administrator for pipeline safety; the Honorable Terry Goddard, who is the Attorney General of the State of Arizona; Honorable Marc Spitzer, the Chairman of the Arizona Corporation Commission; and the Honorable Bob Walkup, the Mayor of the City of Tucson. I welcome you here and may I be corrected on the pronunciation of your name, sir?

Mr. BONASSO. You have pronounced it just right, sir.

The CHAIRMAN. Thank you. Please sit down and please proceed. Welcome, Mr. Bonasso.

**STATEMENT OF SAMUEL BONASSO, ACTING ADMINISTRATOR,  
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION,  
DEPARTMENT OF TRANSPORTATION; ACCOMPANIED BY  
STACY GERARD, ASSOCIATE ADMINISTRATOR FOR PIPELINE  
SAFETY**

Mr. BONASSO. Thank you, Mr. Chairman. I appreciate this opportunity to inform you of our progress to improve the safety of pipelines, to discuss our activities in connection with the Kinder Morgan accident of July 30, and to review some of our progress and plans for improving safety in the future.

Much of the public discussion since the Tucson incident reflects confusion over: (A) what caused the pipeline failure, and (B) what might have prevented it from happening. I hope that this hearing will bring clarity to these questions and other concerns that the public has.

Corrosion of the metal itself was not the cause of the pipeline failure in Tucson. This pipeline failure resulted from a cracking phenomenon that rarely occurs in liquid pipelines. Regretfully, science does not know much about this phenomenon, including how to detect it very well. The testimony I have submitted for the record covers this in detail and I am prepared to expand.

The Nation's pipelines are essential to our way of life. The 2.3 million miles of natural gas and hazardous liquid pipelines carry near two-thirds of the energy consumed by our Nation. Pipelines are the safest way to support these enormous quantities of natural gas and hazardous liquids. The increased need for pipeline safety is rooted in demographic changes taking place in our country. Suburban development in previously rural areas has placed pipelines closer to people. This increases the risk that pipeline accidents, although infrequent, will have tragic consequences. The Tucson pipeline incident demonstrates what can happen when communities encroach on pipelines and a failure occurs. Expansion and development also means more construction activity, which is the leading cause of pipeline accidents.

Pipeline safety is more than inspecting pipelines. It involves regulation, technology, information, State government partnerships, damage prevention, communication, and public education. We have strengthened all of these elements in just a few years thanks to the attention of the Congress to pipeline safety, specifically by your Committee and the Administration.

We are growing. Ten years ago, the Office of Pipeline Safety consisted of 70 employees with 28 inspectors. Today we are 143 employees and 85 inspectors. Our partnerships with the States, such as our agreement with the Arizona Corporation Commission, provide several hundred more inspectors. The growth of our program has enabled the Office of Pipeline Safety to clean up most of the 12-year backlog of outstanding mandates and recommendations from Congress, the National Transportation Safety Board, the DOT Inspector General, and the General Accounting Office.

At the same time, the Pipeline Safety Improvement Act of 2002, enacted just 10 months ago, has given us many new mandates. RSPA has aggressively responded and we are also addressing these new mandates. In addition, since 9/11, we have devoted considerable attention to national pipeline security. Mr. Chairman, following your lead with legislation 3 years ago, we took a new, more comprehensive, informed approach to identifying and managing risks that pipeline operators face and pipelines pose to our communities.

Today we know more about pipelines, the worlds they traverse, and the consequences of a pipeline failure. We finalized 14 regulations and incorporated 30 international consensus standards into our safety regulations. We have awarded almost \$8 million for three dozen research projects to improve pipeline safety. We have adopted a tough but fair approach to enforcement, making heavier use of large fines, while guiding pipeline operators to meet higher safety standards.

Our inspections are much more rigorous. In 1996, a standard pipeline inspection took an inspector up to 3 days to perform. Today we spend 20 times that amount on a comprehensive inspection. We have strengthened our partnership with State pipelines—State safety agencies such as the Arizona Corporation Commission through increased training, information technology communications, and policy collaboration.

We are achieving results. Comparing the last 5 years to the previous 5, hazardous liquid incidents have decreased by 28 percent. Two years ago the volume of oil spilled decreased by 33 percent from a 10-year average. Excavation accidents have decreased over the past 10 years by 59 percent. This is largely the result of work with our State partners and the more than 900 members of the damage prevention organization we initiated called the Common Ground Alliance.

Finally, helping communities to know how they can live safely with pipelines is a very important goal. We are moving on a number of fronts. Working with others, we created a new standard for public education to ensure community officials and citizens have essential safety information they need to make informed decisions. We have commissioned a study by the Transportation Research Board of the National Academy of Sciences to study issues of encroachment and maintenance on pipeline rights of way. We have enlisted the help of the Nation's fire marshals to bring information and guidance to communities to build understanding of pipeline safety and first responder needs.

Similarly, to foster safety and environmental protection on tribal lands, we're working toward a partnership with the Council of En-



ergy Resource Tribes. RSPA and the people of the Office of Pipeline Safety have the strongest possible commitment to improving safety, reliability, and public confidence in our Nation's pipeline infrastructure. Thank you, sir.

[The prepared statement of Mr. Bonasso follows:]

PREPARED STATEMENT OF SAMUEL G. BONASSO, P.E., ACTING ADMINISTRATOR,  
RESEARCH AND SPECIAL PROGRAMS ADMINISTRATION, U.S. DEPARTMENT OF  
TRANSPORTATION

I would like to thank Chairman John McCain for the invitation to speak to the Committee today.

My name is Samuel Bonasso and I am Acting Administrator of the Research and Special Programs Administration (RSPA), of the U.S. Department of Transportation. Accompanying me today is Stacey Gerard, Associate Administrator for the Office of Pipeline Safety (OPS).

RSPA's Office of Pipeline Safety has been engaged in the past three years to rebuild the Nation's pipeline safety program. Today, I will speak to the considerable challenges to this effort, many of which we have surmounted, others which remain ahead. I will also address our oversight of the pipelines of Kinder Morgan Energy Partners, LLP, operators of the pipeline that failed in Tucson. Finally, I will discuss the pipeline failure that threatened a community in Tucson and led to gasoline shortages in the Phoenix area.

The nation's pipelines are essential to our economy and our way of life and are a significant part of our Nation's critical infrastructure. The 2.3 million miles of natural gas and hazardous liquid pipelines carry two-thirds of the energy consumed by our Nation. As the people of Phoenix must understand, you cannot replace even an eight-inch pipeline with gasoline tank trucks. Moreover, there is no way to transport the enormous quantities of natural gas and hazardous liquids that is safer than pipelines.

We are working aggressively to make pipelines safer, to attain a fundamental goal: that is, to build public confidence in the safety of the Nation's pipelines.

We are here today because that public confidence was shaken in Tucson in the early afternoon of July 30. As you know, the pipeline that ruptured sprayed thousands of gallons of gasoline on homes under construction—some only 40 feet away. Fortunately, no one died; no one was injured. Certainly lives were disrupted and property was badly damaged, and we understand the fear that this incident has left in its wake.

As many will learn today, pipeline safety is a very complex, technical matter. Much of the discussion we have heard in the weeks since the Tucson incident reflects confusion over what caused the failure of the pipeline and what might have been done differently to have prevented it from happening. I hope that the information presented by all witnesses today will bring clarity to the questions and concerns of the public.

Safety is the top priority of the U.S. Department of Transportation. Secretary Norman Mineta has given us a simple but profoundly important goal: to improve safety and save lives.

Safety is at the core of RSPA's mission. We are the Federal agency that regulates the movement of hazardous materials by all modes of transportation, including pipelines. RSPA also provides emergency support for transportation during emergencies. Also, across all modes of transportation, RSPA develops transportation technology and provides training for transportation professionals.

To be clear, our pipeline mission is safety it does not encompass the regulation of energy supplies delivered by pipelines. While we consider the impacts safety activities can have on the supplies of natural gas or liquids delivered by pipeline, our sole focus is safety. That said, there is a direct correlation between pipeline safety and pipeline reliability; pipelines that fail do not deliver fuel.

Pipeline safety is more than inspecting pipelines: it involves regulation, technology, information, state government partnerships, damage prevention, communication, and public education. All of these elements have been strengthened in only a few years, thanks to the attention that the Congress, specifically your committee and the Administration have devoted to improving pipeline safety. We have significantly improved our overall ability to oversee and enforce pipeline safety.

The relatively new emphasis on pipeline safety has emerged from the confluence of a number of trends. Transmission pipelines were once found mostly in rural

areas, away from population centers, people and activity. Until 1970, pipeline safety was not a Federal responsibility.

However, as suburban sprawl has expanded, pipelines that were once in rural areas now pass along the edges of communities, increasing the risk that pipeline accidents, as infrequent as they are, will have tragic consequences. The Tucson pipeline incident is a clear example of what can happen when communities encroach on pipeline rights-of-way. We have seen worse examples of encroachment, with buildings and communities built right over pipelines. There are no Federal laws that govern land use in the areas near pipelines.

The Chairman of the Federal Reserve Board noted earlier this year that domestic natural gas supplies are not expected to keep up with increases in demand and that the Nation will have to rely on increased imports of natural gas. This demand, combined with the expansion of our cities and suburban areas requires expansion of the pipeline infrastructure, although the increased construction activity can lead to pipeline accidents, as backhoes and other equipment dig into the ground, and the pipelines. The economic boom of the nineties brought greater risk of construction equipment striking pipelines. While the damage to pipelines by construction equipment often results in instant and deadly consequences, it is not always so. Damage to pipelines from construction may remain undetected and leave the potential for a future rupture.

Our national appetite for energy has increased, and will continue to do so. There will be more pipelines.

Increased demands for energy, along with a consolidation of the pipeline industry and increased competition over the past decade are putting more strain on the pipeline infrastructure. For example: changes in patterns of energy consumption of natural gas have led to decreased pipeline down-time for the natural gas industry. Operators once had six months a year of pipeline off-peak time to repair and maintain pipelines and to refill storage capacity. Today, electric power requirements for natural gas have reduced down-time to a maximum of two months a year. Gas operators must balance the need to fill up gas storage with time for testing and repair. Increased inspections and testing of pipelines will take more pipelines out of service and could impact the delivery of energy.

Congressional reauthorizations of the pipeline safety program in the late eighties and nineties provided this very small agency with many complex tasks. Further, the Oil Pollution Act of 1990 provided new environmental responsibilities and in 1998, the One Call Notification Act added damage prevention tasks that extended RSPA's sphere of influence to the entire community of underground utilities. While RSPA successfully completed the mandates of the latter two statutes in a timely manner, a backlog of mandates from the reauthorizations of 1988 and 1992 had built up.

In March 2002, RSPA made a commitment to clean up our record. By May 2002, our actions led to the NTSB removing the Office of Pipeline Safety from its "Most Wanted List of Safety Recommendations," for the first time in a dozen years. Today we have reduced the backlog by 63 percent. As a result of recent emphasis on the need to improve pipeline safety, RSPA's Office of Pipeline Safety (OPS) has expanded. In 1994, the OPS consisted of 70 employees, including 28 inspectors; our budget was \$17 million. Today, OPS has 143 employees, with 85 inspectors and a budget of \$63 million. For 2004, we requested to increase the inspectors to 109 and a budget of \$67 million. Moreover, our partnerships with states, such as our agreement with the Arizona Corporation Commission, expand our capabilities by hundreds of inspectors. In current day terms, we have better resources to address our responsibilities, and appreciate the Congress allocating increased funding.

In addition to completing the mandates and recommendations of the past, RSPA is addressing the many new requirements and responsibilities of the Pipeline Safety Improvement Act of 2002 (PSIA) enacted almost 10 months ago. We moved aggressively to respond to all the regulatory requirements:

- We completed operator qualification standards and expect to meet the statutory deadline for completing inspections.
- We defined alternative mitigation measures when operators cannot complete repairs in time with regulatory requirements.
- We presented a gas Integrity Management proposed rule to the technical advisory committee in May, have acted on their recommendations, and we expect to publish the final rule on schedule.
- We assisted operators with meeting public education requirements by providing workshops on a newly developed consensus standard and an approach to self assessment.

- We enforced the mapping requirement and achieved 98 percent compliance within 6 weeks of the statutory deadline.

As to longer term program development requirements, we have begun all of the major studies and plans:

- We are meeting with operators on our plan to implement the controller study.
- We drafted the required memorandum on research roles and a five year plan, including the comments of many experts we consulted.
- We continue to implement the damage prevention requirements associated with the one-call provisions and have a new cooperative agreement with the Common Ground Alliance.
- We petitioned the Federal Communications Commission to establish 3-Digit dialing and the FCC is moving to the required rulemaking.
- We continue to work with the Council on Environmental Quality to improve the coordination of permits needed to repair pipelines in accordance with our new Integrity Management standards, and
- We have appointed an ombudsman as required by law.

The rupture of the pipeline in Tucson was all the more dangerous because development had encroached so close to the pipeline right of way that houses were only about 40 feet away. One of the most significant aspects of the new law is the requirement to study land use practices, zoning ordinances and preservation of environmental resources.

In conjunction with the Federal Energy Regulatory Commission, we have asked the Transportation Research Board of the National Academy of Sciences to begin a study to address issues of encroachment and maintenance on pipeline rights-of-way. Our goal is to identify promising approaches for local government for managing land use near pipeline rights-of-way-guidelines on what development is compatible with pipelines, and what development to avoid. The study we have commissioned brings together all key stakeholders—including representatives from local government, developers, pipeline companies, environmental groups and others.

RSPA and our Office of Pipeline Safety are working diligently to improve pipeline safety, as societal and economic changes make the challenge more complex.

To manage the risks inherent in pipeline transportation, we have been building a new, more comprehensive and informed approach to pipeline safety. Ours is a multi-phase strategy which leaves no stone unturned in identifying and addressing pipeline risks. Our efforts are consistent with legislation you proposed in 1999 and the Pipeline Safety Improvement Act of 2002.

We believe this approach is working.

Comparing the last five years to the previous five years, hazardous liquid incidents have decreased by 28 percent. Two years ago, the volume of oil spilled decreased by 33 percent from a ten-year average. Last year, saw a 57 percent decrease.

Excavation accidents have decreased over the past ten years by 59 percent, even while housing starts, which bring construction risk near pipelines, were on the rise.

Over the past three years, we have built a more comprehensive approach to identifying and managing the risks that pipeline operators face and that pipelines pose to communities. Basing our efforts on the solid foundation of pipeline regulation:

- We revitalized our approach to oversight of compliance by operators and Integrity Management efforts.
- We required better data about pipelines, the world they traverse and consequences in the event of a pipeline failure.
- We raised the standards for safety in the testing and repair of pipelines, corrosion control, operator qualification, public education and damage prevention, both through promulgation of regulations and adoption of national consensus standards.

In three years:

- We finalized 14 regulations
- We incorporated about 30 new national consensus standards in our regulations (and will shortly be finalizing six more regulations); these join 80 national consensus standards embodied in our regulations.
- We started a research program to improve technology for the detection, diagnosis and remediation of safety problems;
  - RSPA awarded more than \$7.8 million for approximately 36 research projects.

- The General Accounting Office recently gave a favorable review of our approach to research program management.

Central to RSPA's more comprehensive safety strategy is a more systemic management of risk: Integrity Management. In past regulatory and oversight practices, we prescribed specific measures for specific modes of pipeline failure. Today, we add another level of protection by requiring operators to address every way a pipeline could fail using the best tools and practices that apply.

In our enforcement orders, we require operators to provide a plan of response that we evaluate for adequacy. In Integrity Management planning, we require operators to set priorities based on the consequences of failure. Operators must identify areas along their pipelines where consequences of a failure would be severe. In these areas, they must provide even further protection.

Under Integrity Management, pipeline operators must make better use of new and existing information on pipeline operation, history, and potential failure. Higher standards for testing and repair are key components for Integrity Management.

Integrity Management provides a sound scientific and technical basis for strengthening the pipeline system segment by segment, where people and important environmental resources cohabit with pipelines.

Overseeing and enforcing Integrity Management poses a challenge to regulators to develop a much better understanding of the condition of a pipeline and the technologies and tools that are best suited to address conditions that may be unique to a pipeline system.

Our new regulations have both prescriptive and performance aspects, so Federal and state regulators will need detailed training and inspection protocols. GAO gave RSPA a favorable review for our preparation to oversee the Integrity Management Program.

Integrity Management is a concept that has evolved as the Office of Pipeline Safety has revamped enforcement policy over the past 13 years (1990–2003), through three major phases. Each phase corresponded with major program developments and built upon the lessons learned of the previous years. From 1990–1995, OPS focused on standard inspections that addressed compliance with the then prescriptive pipeline safety regulations. From 1995–2000, risk management principles were incorporated in the regulatory programs; oversight relied on more informal written communication about safety improvements.

Following the Bellingham, Washington and Carlsbad, New Mexico accidents in 1999 and 2000, OPS returned to more traditional and formal enforcement tools, such as corrective action orders. Our current focus is system-wide improvement, evolving from risk management principles and emergence of new Integrity Management standards. OPS now makes heavier use of large fines as appropriate. Average penalties since 2000 were ten times higher than the previous ten years.

For example, within 100 days of the liquid Integrity Management regulation becoming effective, OPS inspected all 66 major interstate operators for compliance with the initial regulatory requirements. We took enforcement actions on approximately 80 percent of the operators. Of these, Kinder Morgan was one in which OPS took a more serious enforcement action.

OPS inspected Kinder Morgan in mid-January 2002. On May 2, 2002, we issued a Warning Letter and Notice of Amendment about deficiencies in their identification of High Consequence Areas. We received a response from the company within one month, in June 2002 that was satisfactory. In February 2003, we followed through with a site visit to the company, and in April conducted two weeks of comprehensive Integrity Management inspection. We conducted further follow-through Integrity Management review in June 2003. We issued a final order on the Notice of Amendment in August 2003. These actions were ongoing at the same time as OPS addressed enforcement in a separate matter with Kinder Morgan.

When we are concerned about the potential for hazardous conditions discovered by tests or following pipeline accidents, we use formal and enforceable Corrective Action Orders (CAOs). Through CAOs, we can compel operators to reduce operating pressure in order to prevent additional failure, to determine the cause of an accident, to assess where similar conditions exist across the pipeline system and to develop and implement a plan for remediation. These actions often cost pipeline operators many million of dollars in assessment, testing, repair and replacement expenses. Since the Carlsbad accident in August 2000, we have issued 29 CAOs as compared to 21 in the prior 11 years, a 500 percent increase in the use of a formal enforcement tool.

As another point of comparison, in 1996, a standard inspection took an inspector two and half to three days to perform. Today, a comprehensive inspection takes a team of four OPS staff and two contract experts two weeks each to execute, in addi-

tion to weeks of prior preparations and weeks of follow-on analysis—a twenty-fold increase in the resources applied. Extensive resources go into training our inspectors and provide the information support systems needed to track inspection and enforcement. For Integrity Management inspections, our enforcement tracking system, readily available through the Internet to and state regulators, captures all relevant information on an operator and our oversight process, critical to gauging progress during future inspections.

A significant influence on our enforcement program has been the necessary focus on pipeline security that emerged quickly after the terrorist attacks of 9/11. We assessed the readiness of the most critical pipeline systems to withstand attack, prioritized the criticality of the individual pipeline systems, and then worked with industry and state agencies to develop security standards. We have developed a system that enables pipeline operators to increase their security in synchronization with the Homeland Security Advisory System. We executed our security measures jointly with the Department of Homeland Security.

To more thoroughly understand and address pipeline integrity issues and regional concerns, we improved partnerships with state and local agencies. Through increased training, information technology, communications, and policy collaboration, we have strengthened our partnership with state pipelines safety agencies. They share oversight responsibilities with us and inspect over 90 percent of the pipeline infrastructure. By way of example, the Arizona Corporation Commission (ACC) has been in the pipeline safety program since 1983. ACC became an interstate agent in 1987, taking responsibility for inspecting interstate gas pipelines and interstate hazardous liquid lines in 1988. Our distribution of state grant funds is based on performance and Arizona has consistently received the highest possible rating—100 percent. The ACC has always been in the forefront of pipeline safety policymaking, participating in the Local Distribution Company Risk Assessment Feasibility team, the System Integrity Inspection Program (the sole state participant) and as faculty to our training programs.

RSPA added to this already good pipeline safety corps the more than 900 members of the Common Ground Alliance (CGA), a voluntary damage prevention organization we initiated in 1999. With our state partners and the CGA, we share responsibility for preventing damage to pipelines and other utilities by advocating and adopting practices of the Common Ground Report, required by the Transportation Equity Act. This alliance provides the synergy of common safety actions in the “underground” by other utilities, railroads, insurance companies, public works and other municipal organizations. Through a new program with the National Association of State Fire Marshals, we add the capability of first responders to the ranks of allies helping us with damage prevention and community education. We are also working to establish a partnership with the Council of Energy Resource Tribes to foster safety and environmental protection on Tribal Lands, as well as improved communications between each of the tribes, OPS, the National Association of Pipeline Safety Representatives and the pipeline industry. This effort will help to identify high consequence areas on Tribal Lands and provide pipeline emergency response and inspection awareness training.

We have energized our efforts to reach the public with messages about how citizens can protect themselves and the pipelines. Working with the pipeline industry and state agencies, we created a new public education standard for operators to acquaint citizens and public officials with the essential safety information and to make informed decisions about living safely with and minimizing damage to pipelines. This year alone, we have solicited public involvement in 15 public meetings addressing Integrity Management, operator qualification, public education, research, and mapping.

The mapping of the Nation’s pipelines has been a major endeavor of the Office of Pipeline Safety for several years. While submission of data by operators for the National Pipeline Mapping System (NPMS) had been voluntary, the PSIA made it mandatory. The NPMS, a multi-layered Geographic Information System (GIS), contains information about the pipelines as well as the locations of populated areas and unusually sensitive areas, such as sources of municipal drinking water. OPS collected these data over a period of years and created a unique national database. OPS launched the NPMS on the World Wide Web in April of 2001, offering a sophisticated resource to enable Federal, state, and local officials industry and others to understand the extent of the pipeline infrastructure and its relationship to environments.

The terrorist attacks of 9/11 made clear that access to this database, which contains information that could facilitate terrorists’ plans, could no longer be completely available to the public.

We have now restructured the NPMS to make the information again available to officials with a need to know. Today, Federal, state and local officials can register to have access to pipeline data within their realm of responsibility. The public may also use a tool on the NPMS to obtain information on operators with pipelines in their vicinity. By searching within a county or Zip code, an individual is provided with contact information for the pipeline operator, so that information may be obtained, for example, on the proximity of a pipeline to a community. The NPMS is at <http://www.npms.rspa.dot.gov/>

I will now discuss our enforcement of the pipelines of Kinder Morgan Energy Partners, LLP, operators of the pipeline that failed in Tucson.

Kinder Morgan's 10,000 miles of pipelines transport more than two million barrels per day of gasoline and other petroleum products. We inspect Kinder Morgan's facilities on a rotational basis usually in a three-year cycle. The Arizona Corporation Commission and the California State Fire Marshall, our hazardous liquid interstate agents, assist in our inspection of Kinder Morgan's vast hazardous liquid pipeline infrastructure.

OPS records show that Kinder Morgan has managed its hazardous liquid pipeline infrastructure as well as other companies with similar pipeline mileage. Besides Corrective Action Orders in 2001 and 2003, OPS has issued five enforcement letters to Kinder Morgan since 1996.

Most of the problems on Kinder Morgan's hazardous liquid pipeline facilities in Arizona have been due to external corrosion. The 2001 Corrective Action Order directed Kinder Morgan to manage the external corrosion on the 6-inch Phoenix to Tucson refined products pipeline. The 2003 Corrective Action Order, issued following the July 30 accident, addressed stress corrosion cracking (SCC) on the Tucson to Phoenix refined products pipeline.

There has been much public discussion and often-misleading speculation about corrosion following the July 30 accident. This has contributed to some concluding that external corrosion found on the pipeline was responsible for the rupture. It was not. Based on metallurgical analysis, the cause of the rupture was stress corrosion cracking.

SCC on pipelines is a lesser-known phenomenon that is vastly different from galvanic corrosion and rarely found to cause failure in hazardous liquid pipelines. There have been only five reported sec failures on hazardous liquid pipelines since 1985.

Galvanic corrosion, also known as pitting corrosion or general corrosion, is very easily distinguished from SCC. In galvanic corrosion there is metal loss in the form of small pits, much like rust. Traditional corrosion is very easily controlled with the application of cathodic protection, which applies electric current to the pipeline surface.

Today, technologies enable discovery of pipeline sections that are not adequately protected, and our statistics have shown a gradual decrease in pitting corrosion. Most pipeline companies are now also using in-line inspection devices to assess the integrity of their pipelines to understand the nature of the resident and long-term corrosion threats on the infrastructure. Over the last decade, in-line inspection devices have proven their ability to recognize and measure pitting corrosion on the inside and outside surfaces of pipelines. Thus, it is now very easy to discover, control and manage general corrosion.

SCC, also known as environmentally assisted cracking, is a relatively new phenomenon. Instead of pits, SCC manifests itself as cracks that are minute in length and depth. Over time, individual cracks coalesce with other cracks and become longer. The rate of growth of these cracks is very slow; in the neighborhood of one one-hundred-thousandth ( $1 \times 10^{-6}$ ) of an inch per year.

SCC is caused by the union of three factors: stress regime, pipeline metallurgy and coating, and environment. Thus, SCC is cracking induced from the combined influence of tensile stress and a corrosive medium.

In the pipeline industry, SCC first revealed itself in natural gas pipelines. In Canada, for example, the ratio of failures on natural gas pipelines versus failures on hazardous liquid pipelines is 4:1. The failures in hazardous liquid pipelines can be more random and more catastrophic because of the phenomenon known as cycling, pressure surges that cause cracks to grow.

Currently, there are no tools or mechanisms available to confidently identify the susceptibility of pipeline sections to SCC. Science has not yet discovered the boundary conditions, or the intersection, at which the three factors interact to cause SCC.

Questions have been raised about inspections of the six-inch pipeline now operated by Kinder Morgan. This pipeline has not ruptured, and is now being used to supplement the delivery of gasoline to Phoenix. Kinder Morgan started operating

the six-inch Santa Fe Pacific Pipeline refined products pipeline that extends from Phoenix to Tucson in 1998.

The ACC conducted inspections in 1996 and 1997. After another inspection in 1998, OPS directed Kinder Morgan to conduct a close-interval survey on about 30 miles of pipeline. Because of persistent external corrosion problems, in 1999 Kinder Morgan launched an in-line inspection tool to understand the extent of external galvanic corrosion on the pipeline. In 2000 as a result of this inspection, Kinder Morgan decreased the operating pressure to about one-half of regular pressure.

In 2001, Kinder Morgan also repaired about 52 locations and replaced about one-half mile of pipeline where the corrosion was extensive. During the repair and replacement process, OPS conducted inspections to review data from the internal inspection to assure that repairs were taking place at all the sites of major corrosion. We determined that Kinder Morgan was taking proper action. Following this remedial work, ACC's standard inspection revealed that this Kinder Morgan pipeline needed continued monitoring for galvanic corrosion.

Immediately thereafter, OPS issued Kinder Morgan a Corrective Action Order (CPF No. 4-2001-5010H) to address the long-term integrity of the six-inch refined products pipeline. The hearing on this CAO was conducted in August 2001 and the Order was amended in March 2003. The delay in amending the Order never compromised public and environmental safety because the immediate threats on the six-inch pipeline were remedied by the close-interval survey and the repairs before the Order was issued. As well, the standards that Kinder Morgan used to repair the pitting anomalies exceeded requirements in the regulations at that time and subsequent regulations now in effect.

OPS's interest was in the long-term health of the pipeline and our strategy was to maintain Kinder Morgan's attention on this facility. We intentionally keep orders open to continuously evaluate pipeline conditions until we are satisfied that the pipeline does not merit special attention.

Regarding the Kinder Morgan refined products pipelines extending from Tucson to Phoenix (the pipeline that ruptured): we have revised the August 6, 2003 Corrective Action Order. We are now directing Kinder Morgan to conduct systemic tests on the extent of SCC on the 8-inch and 12-inch pipeline using the most current knowledge and evaluation techniques. We are also broadening this evaluation include the six-inch pipeline, to ensure that sec has not migrated on to the six-inch pipeline in areas where it shares the same subsurface environment as the 8/12-inch pipeline. We have issued an industry-wide advisory on this matter. We will be conducting a public workshop on these techniques in December to assure broad dissemination and discussion of these issues.

The RSPA effort to rebuild the pipeline safety program is well under way and the results of our strategy are evident in data and organizational improvements in the companies we regulate. Through expanded partnerships with state and local officials, we expect to strengthen the effectiveness of our safety and prevention efforts. We have requested additional resources to help enable us to execute our strategy and we are appreciative of the priority that Congress has placed on pipeline safety.

RSPA continues to have the strongest possible commitment to addressing outstanding mandates and recommendations to us, and we believe that the record of our recent performance should serve as an indication of our resolve to improve the safety, reliability, and public confidence in our Nation's essential pipeline infrastructure.

The CHAIRMAN. Thank you very much. Attorney General Goddard, welcome.

#### **STATEMENT OF TERRY GODDARD, ATTORNEY GENERAL, STATE OF ARIZONA**

Mr. GODDARD. Mr. Chairman, thank you very much. It's a pleasure to be here and to speak about the disruption inflicted in our state just a very short while ago. I would like to concentrate on the part of your invitation to speak which emphasized, as you've already alluded to, the effect on consumers, the effect on prices, the effect on supply. The Governor has already spoken, I think, very eloquently about the safety aspects. I have a little bit to add but I'll leave those in my final comments.

I think the disruption that we suffered showed a number of things about Arizona, many of which were disturbing, not only the danger posed by the oil pipeline, but the fragile nature of our economy, and how vulnerable we could be to this kind of a disruption. The future depends upon affordable, reliable, and safe supplies of both energy, fuel, electricity, and water. Those are our two critical elements and they're both in short supply. Arizona is in a particularly delicate position due to the scarcity of water and the lack of crude oil production in the gasoline refining in our State.

Our gasoline supply in particular in Arizona depends, as has already been noted, on two pipelines, one through the west and one through the east, and I think it's the vulnerability that our economy in our state has that came into very sharp focus during this crisis. We didn't have adequate back-ups, we didn't have alternatives, we didn't have a competitive market in this State, and as a result we found when the pipeline broke and we suddenly had disruption that there wasn't, for example, storage in Maricopa County we can fall back on. There aren't tank farms except very short supply ones in this county. It appears that we have no refineries, that we have no alternative supply.

The other thing that came in sharp relief was how hard it was to replace the pipeline and efforts were made gallant efforts were made to bring trucking supplies into Maricopa County, but it simply was inadequate as a result of the time limitations the truck drivers have to adhere to under Federal standards. Those were waived to a slight degree as a result of the crisis, but nonetheless, many trucks were left idle when they could have been producing gasoline for our central part of the state.

There was talk about bringing the railroad into production, but that ultimately proved far too difficult with regulator barriers and in getting a supply of tank cars mobilized in time. And even the National Guard, our biggest tankers were in Iraq and the smaller ones turned out to not have qualified drivers for doing commercial deliveries and the nozzles used by commercial gasoline distributors would not work on our military trucks. So a lot was learned in that process and I think we'll be in better shape in the future, but still the vulnerability of the whole system was brought into sharp focus. And all that is in the context of the fact that our whole gasoline delivery is facing a major shift here in Arizona.

California has provided approximately 70 percent of the gasoline supplies and we know that picture is changing. It's down to about 50 percent today and we believe in the next 4 or 5 years it will go to almost 0. California's production is going to be used in California or we're going to have to pay incredible prices to get it back from them. So we see major changes coming in our market and we need to be better prepared for them.

As Attorney General in charge of enforcing existing laws and representing State agencies, many of whom have been working tirelessly to ease the damage caused by the Kinder Morgan pipeline shutdown, Kinder Morgan has recently turned over voluminous documents relating to the spill clean-up to my office, and we're in the process of evaluating and studying those documents. Our anti-trust principle of legal authority in this area is under the antitrust laws and Senator, as you've already described, it requires a con-



spiracy in restraint to trade or conspiracy to fix prices to bring an antitrust violation in cases like this, and we felt that at least so far our investigation has not shown such a conspiracy. However, we definitely

The CHAIRMAN. Why do you think you should have to prove a conspiracy?

Mr. GODDARD. Because that's the only statutory authority we have, sir.

The CHAIRMAN. But I mean, it doesn't make sense, does it?

Mr. GODDARD. Well, I believe given what happened in this case, where about a dozen stations out of 1,200 in Maricopa County took this opportunity to raise prices, as you and the Governor have noted, to exceptional levels \$4, in one instance \$4.96 was the highest recorded price that we have we've investigated out of our office, although we didn't have a legal—we didn't have a price gouging statute.

Nonetheless, we investigated for the record incidents that had been complained of. We verified that it was a very small number of stations, rogue stations, who took advantage of this situation and took their prices to the highest possible level. Most stations did not. Most applied a modest surcharge over wholesale prices because we were monitoring the wholesale during this problem as well. And as I said, only about a dozen truly gouged the public.

I am working very hard with legislators to try to have a gouging statute an anti-gouging statute in the next session, because I think that's a critical weapon, as the Governor has described, in times of emergency when we don't have a competitive market, when basically the public is the victim of whatever price is charged because they can not competitively shop, I believe some protections are in order.

Now we also had, as you know, major supply interruptions. I did want to speak to prices though before I go on. We have a chart here, I hope you can see it, Senator, it's the one on the far right, which shows as the lower line national gas prices, and as the upper line central Arizona gas prices, reaching a high of \$1 excuse me, \$2.14 for a gallon of regular, clean-burning fuel on August 26. Obviously we went from right about the national average just a few days before the disruption to an extraordinary peak, which we are still in an area which is above the national average. Our prices obviously have come down faster than the national, but what you see, I think, in stark relief from that particular diagram, is just how quickly and how severely Arizona consumers, and Arizona law enforcement, I would like to note, were affected by this shortage. Bay stations, in fact, ran out of gasoline during this problem and for approximately a week we had shortages within the market, and that is detailed in my filed remarks.

I'm afraid that the August supply destruction could recur, absent improvements in our gasoline supply alternatives in Arizona. Additional gasoline supply may come from another pipeline, which is nearly complete in Texas. While this new pipeline might help bring additional product into Arizona and reduce our dependence on California gasoline, the physical capacity of limitations with the existing pipeline in Arizona, by that I mean the one from El Paso to Tucson, reduces the usefulness of this option. Furthermore, FERC

has a pro-rata policy, which appears to suppress the opportunities for new entrance into this market.

There's also a possibility of a new refinery here in Arizona, it has been widely discussed. Again, although this may appear to be a positive solution, I have serious concerns about the physical practicality, the time to completion, pollution controls, and environmental justice issues. My office will continue to assess and evaluate potential market manipulation in gasoline supply. If I discover illegal conduct, I will vigorously prosecute.

I'd like to thank the Committee, Senator McCain, for the opportunity to speak here today.

[The prepared statement of Mr. Goddard follows:]

PREPARED STATEMENT OF TERRY GODDARD, ATTORNEY GENERAL, STATE OF ARIZONA

### **I. Introduction**

Thank you for the opportunity to present testimony on the important issues relating to gasoline in Arizona. I intend to focus my remarks on fuel supply and consumer costs, with a brief note about pipeline-related public safety.

Arizona's bright economic future depends on affordable, reliable and safe supplies of both energy (fuel and electricity) and water. Arizona is in a delicate position due to the scarcity of water and the lack of crude oil production or gasoline refining in our state. For gasoline supply in particular, Arizona depends on two pipelines, one from the West and one from the East. Affordability of gasoline is crucial for many Arizonans on fixed incomes and those workers with incomes lower than the national average who are hardest hit by rising gasoline prices. A reliable fuel supply is essential for maintaining a stable economy. Safety in supply is of the utmost importance for Arizonans' health and our environment. Fuel spills and other gasoline-related pollution affect the air, water, and land.

We have seen that increased fuel costs can also affect public safety. During the price spike of Spring 2003, several Arizona law enforcement agencies faced curtailment patrols and other activities because of budgetary constraints combined with gasoline price increases.

Arizona is facing a major shift in gasoline supply. Where Arizona traditionally received seventy percent of its gasoline from California and thirty percent from Texas, in recent years the trend is towards an even fifty-fifty split.<sup>1</sup> In the future, California's demand for gasoline will likely exceed its production capacity.<sup>2</sup> Not only will Arizona no longer be able to receive gasoline from California, but California may begin to compete with Arizona for gasoline from Texas.<sup>3</sup>

Even while Arizona, and Phoenix in particular, move towards improved mass-transit, energy conservation, and other fuel sources, Arizona's dependence on gasoline increases daily due to enormous population growth. Both government and industry must continue to address and plan for this growth.

As Attorney General, I am charged with enforcing existing laws and representing state agencies, many of which have been working tirelessly to ease the damage caused by the recent Kinder Morgan pipeline shutdown. My office continues to work closely with the Governor's Office, the Governor's Gasoline Working Group, and other state agencies to evaluate what led to the gasoline shortage, and to develop long-term policy solutions.

The Arizona Department of Environmental Quality (ADEQ) is investigating the July 30, 2003 gasoline spill in northwest Tucson. Kinder Morgan has recently turned over voluminous documents relating to the spill and clean-up. The Attorney General's Office and ADEQ's investigation into this matter is ongoing. ADEQ also worked with the Governor and the Environmental Protection Agency (EPA) to obtain a waiver allowing conventional fuel to be used in Maricopa County during the shortages.

<sup>1</sup> Source: Arizona Departments of Commerce Energy Office and Weights and Measures.

<sup>2</sup> Some estimates show California's demand for gasoline exceeding production by 2007. Source: Stillwater Associates, April 2002, presented by AZ Dept. of Commerce Energy Office in May, 2003 report.

<sup>3</sup> See, e.g., "Gulf Coast to California Pipeline Feasibility Study," California Energy Commission Committee Report, August 2003.

The Department of Weights and Measures has been instrumental in monitoring supply and fuel quality, with particular attention to the time period during the gasoline shortage.

The Department of Commerce, Energy Office is working on long-term gasoline supply policy issues facing Arizona.

The Department of Real Estate is investigating whether residential subdivision developers properly disclosed the location of the pipeline.<sup>4</sup> If violations are found, these developers could face civil penalties and future difficulties in obtaining licenses to sell property. Further, home buyers who were not informed of pipeline proximity may have recourse either through private legal action or through the Department.

The Attorney General's Antitrust Unit continually monitors the market for evidence of anticompetitive behavior, including price fixing, supply manipulation, and other antitrust violations.

I am also working with legislators on proposed price gouging legislation to deter and punish those who would take advantage of consumers during a state of emergency. Prices as high as \$4.96 per gallon of regular CBG were reported to and investigated by my office. Consumer feedback from about 1,000 complaints and inquiries demonstrated overwhelming popular support for price gouging legislation.

#### *Background*

- As the pipeline enters South Tucson, it carries fuel to Phoenix through residential areas, past Mission View Elementary School and within feet of the Salvation Army Adult Rehabilitation Center on South Sixth Avenue.<sup>5</sup> A smoking area at the Salvation Army is located directly above the pipeline.<sup>6</sup> The pipeline travels along Starr Pass Boulevard behind residential areas and angles to the north near Cholla High School, the west side of Tumamoc Hill and "A" Mountain. The pipeline passes within a quarter-mile of buildings on Pima Community College's West Campus and residential areas along North La Cholla Boulevard. As the pipeline heads north toward Interstate 10, it runs along a wash that splits the Silver Creek subdivisions, the site of the July 30 rupture.<sup>7</sup>
- July 30, 2003: The Kinder Morgan (KM) gasoline pipeline between Tucson and Phoenix ruptured, and KM reported spilling approximately 10,000 gallons of fuel in northwest Tucson over a residential construction site. After an initial repair, subsequent testing by KM revealed stress corrosion cracking, leading KM to shut down the entire Tucson-Phoenix line on August 8, 2003.
- Mid-August: Severe gasoline shortages developed in Maricopa County as a direct result of the pipeline shutdown. Gasoline prices skyrocketed. Independent dealers lobbied the Governor, the EPA and ADEQ to waive the Clean Air Act requirements, allowing the use of conventional gasoline in Maricopa County, which normally requires Cleaner Burning Gasoline (CBG).
- From 1988 to 2001: The Arizona gasoline pipeline<sup>8</sup> had forty-six probable non compliance violations noted by the Arizona Corporation Commission, including failures to comply with rules concerning corrosion control (1991, 1992, 1995). Since 1993, the Office of Pipeline Safety issued two non-compliance letters and one corrective action. The corrective action was in response to the July 30, 2003, pipeline rupture.

#### **II. Affordability of Fuel**

Gasoline (Cleaner Burning Gasoline, or "CBG")<sup>9</sup> prices in Phoenix skyrocketed from an average of \$1.54<sup>10</sup> per gallon of CBG regular on July 30, before the pipeline rupture, to a record-breaking average high of \$2.14 per gallon on August 26. Phoenix prices are now at an average of \$1.77 per gallon.

These dramatic price increases caused lost income to businesses and consumers. Hardest hit were the working poor, those on fixed incomes, and gasoline-dependant businesses.

<sup>4</sup>Pursuant to Commissioner's Rule R4-28-A1203-4 and Arizona Revised Statutes (A.R.S.) § 32-218(A)(4).

<sup>5</sup>Abayta, Oscar and Eric Sagara, "Ruptured Confidence." Tucson Citizen. Sept. 4, 2003.

<sup>6</sup>*Id.*

<sup>7</sup>*Id.*

<sup>8</sup>Formerly the Santa Fe Pipeline, bought by Kinder Morgan in 1998.

<sup>9</sup>Cleaner Burning Gasoline (CBG) is the fuel blend used in "Area A" to comply with Federal air quality requirements. Area A includes Maricopa County and a small section of Northern Pinal County.

<sup>10</sup>Average retail gasoline prices. Source: AAA Fuel Gauge Report.

To address rising gasoline prices and severe price spikes, I recently sent surveys to every retail gasoline station in Arizona, requesting information on supply and pricing. As a result, we have a better understanding of the Arizona gasoline market structure and possible areas of further inquiry.

My office continually monitors and maintains a database of Arizona gasoline prices<sup>11</sup> as does the Department of Commerce<sup>12</sup> I am working with other state Attorneys General, the Federal Trade Commission, and Arizona state agencies to deter and investigate market manipulation and to promote policies to ensure safe, reliable and affordable gasoline for Arizona's future.

As I discussed earlier, I also support a Price Gouging statute to protect consumers from exploitative pricing of gasoline (and other products) during a declared state of emergency.

### III Reliability of Fuel Supply

As a result of the July 30, 2003 Kinder Morgan pipeline shutdown, many gasoline stations ran out of gasoline. On August 19, sixty five percent of Maricopa County retail gasoline stations were without gasoline.<sup>13</sup> These shortages began on August 17 and ended on August 27.<sup>14</sup>

The gasoline shortages resulted in lost revenues due in part to transportation difficulties. Working Arizonans could not get to work. Others did not drive for recreational purposes. Although difficult to quantify, Arizona likely experienced significant losses from tourism declines and event cancellations due to the instability of the fuel shortage caused.

The August supply disruption could reoccur absent improvements in gasoline supply alternatives to Arizona. Additional gasoline supply may come from another pipeline, which is nearly completed, from Texas. While this new pipeline may help bring additional product into Arizona, and reduce our dependence on California gasoline, the physical capacity limitations of the existing pipeline in Arizona reduces the usefulness of this option. Further, FERC pro-ration policy needs to be reviewed as it applies to new entrants.

There is also the possibility of a new refinery here in Arizona. Again, although this may appear to be a positive solution, I have serious concerns about fiscal practicality, time to completion, pollution controls and environmental justice issues.

I am investigating issues surrounding the gasoline supply shortage. My office is obtaining supply volumes from Kinder Morgan through a Civil Investigative Demand.<sup>15</sup> That information is currently being evaluated. The confidential nature of the documents I am receiving precludes me from discussing this in detail.

My office will continue to assess and evaluate potential market manipulation in gasoline supply. If I discover illegal conduct, I will vigorously prosecute, as in the El Paso Natural Gas case.

### IV Pipeline Safety

The Corporation Commission and the Federal Department of Transportation, Office of Pipeline Safety (OPS) share the responsibility of inspecting the pipeline and enforcing proper maintenance and repairs.

Some sections of Arizona's KM pipeline are fifty-five years old<sup>16</sup> and have numerous leaks and safety violations. I am concerned that improper inspection of this aging pipeline, coupled with lax to non-existent enforcement put Arizonans at risk of serious injury.

As Arizonans have recently learned, the KM pipeline traverses highly populated areas, running near schools and homes. In addition to areas I previously outlined in the Tucson area, the pipeline runs close to two schools in Maricopa County. I am concerned about the loss of life, injuries, and severe damage experienced in Washington and New Mexico. I want to see that property owners near the pipeline are properly informed, and all feasible and reasonable steps are taken to minimize risk to our citizens.

<sup>11</sup> Pursuant to A.R.S. § 41-191.02(0).

<sup>12</sup> Pursuant to A.R.S. § 44-1561.

<sup>13</sup> Source: Arizona Department of Weights and Measures. August 19, 2003 was the first day this survey was conducted.

<sup>14</sup> *Id.* August 27, 2003 was the first date reflecting 100 percent of surveyed gas stations open and supplied with gasoline. By August 24, though, 98 percent of stations were open with gasoline.

<sup>15</sup> Pursuant to A.R.S. § 44-1406.

<sup>16</sup> Kinder Morgan's Tucson-Phoenix 8" pipeline is 55 years old, while the El Paso-Tucson 8" and 12" lines were built starting in the 1950s, and "West Line" from California, a 20" line, was constructed in the mid-1980s.

I am also concerned that there is inadequate pipeline security, including lack of physical barriers to protect the pipeline from inadvertent and intentional damage.

My recommendations for the future include increased frequency and thoroughness of inspections, stronger enforcement of violations, increased Federal financial support for interstate pipeline inspections, increased authority for state inspectors, and a more aggressive approach to pipeline security.

#### **V Conclusion**

My office continues to work with other state and Federal agencies to ensure pipeline safety, reliable gasoline supply and affordable pricing. I am optimistic that increased partnerships between the Federal and state pipeline enforcement authorities will aid in more effective inspections and corrective actions, as necessary. My office will continue to monitor and prosecute any illegal, anti-competitive behavior in the gasoline industry. I will continue to support price gouging legislation to protect Arizona's consumers. Thank you for the opportunity to testify about this important, far-reaching matter.

The CHAIRMAN. Thank you very much. Commissioner Spitzer.

#### **STATEMENT OF MARC SPITZER, COMMISSIONER, ARIZONA CORPORATION COMMISSION**

Mr. SPITZER. Thank you, Mr. Chairman. I appreciate being here. As a preparatory remark, I would be in complete agreement with the comments of the Governor and the Attorney General, and what I think should be very clear for this hearing is that we are all working together as a team to protect Arizona interests, and again, I would indicate agreement with both the Governor's remarks and those of the Attorney General.

I've divided my remarks into four separate areas. In a transmittal letter I have made eight specific proposals that I think would provide some solutions to this problem. The first item is, respect the Federal role for improved pipeline safety through State resources. When I teach government classes, I refer to the healthy tension created by our founding fathers between the branches of government as well as between the State and the national government. When this tension becomes unhealthy, government becomes dysfunctional.

As a four-term State legislator and now as a State regulator, I have occasionally chafed under unfunded Federal mandates. However, as an elected official asserting State prerogatives, my efforts must be productive rather than destructive. Mindless rants against Washington, whether from the left or the right, and feigned ignorance of Article VI of the Constitution serve no purpose. One of our tasks today is to contribute in a meaningful way. The people whose homes were doused with gasoline do not care to hear us shout accusation. The mother who waited in a gas line does not want to hear us blame each other like children. The public expects solutions from us. I will offer my suggestions to that end in the hopes that they add to the discussion and perhaps help us all find resolution.

The transportation of hazardous liquids through interstate pipelines is unquestionably interstate commerce. In the United States there is asserted jurisdiction within United States code Title 49. That does not mean that the exercise of Federal authority of interstate gasoline pipeline has always been wise. It has not. However, I will offer herein suggestions for the Federal Office of Pipeline Safety to work more openly and collaboratively with our commission's pipeline safety inspectors and other State agencies, but we

must recognize Federal statutory authority and the chaos that would ensue if the states enacted 50 different interstate pipeline codes.

For example, were California to mandate annual hydrostatic testing of all interstate pipelines, Arizona's perilous supply of vital commodities would be shut down. Such caprice is neither sound or necessary for the production for the protection of public safety. My proposals reflect the healthy tension between the Federal OPS and the State of Arizona to accommodate all interests, the most important being public safety and the free flow of goods in commerce.

Next section is infrastructure challenges and systemic improvement, and both the Governor and the Attorney General have already alluded to the challenges our state faces. Arizona has virtually no crude oil production and refines no gasoline. Similarly, Arizona has no known deposits of natural gas and as of this date, no natural gas storage facilities. Arizona is dependent on two pipeline systems for natural gas and but one pipeline system for gasoline. These circumstances are unacceptable and all parties, State and Federal, public and private, and the people of Arizona must collectively resolve this problem.

The Corporation Commission convened a series of workshops and public meetings to deal with our natural gas infrastructure, or more precisely, our lack thereof. For several years now, the Commission has spent time and resources seeking additional natural gas pipeline capacity. Arizona's Congressional delegation and you, Senator, have been extremely helpful in dealing with this capacity issue and with the FERC, including the pending litigated case over Arizona's allocation from the El Paso pipeline system.

However, our Commission has zero regulatory authority with regard to gasoline prices and supply. Much more must be done to ensure redundancy of energy capacity and proper repair and maintenance of existing pipelines. The Federal Government, through its agencies, must recognize the need to enhance Arizona's energy infrastructure. Arizona's utter dependence on gasoline and natural gas pipelines and the imperative of public safety require that the commission's pipeline safety inspectors be allowed to participate more openly in the oversight and inspection of pipelines.

The integrity management program, IMP, is an example where more could be done. Under IMP, states are permitted to observe the Federal OPS and the pipeline operator. Observation is not participation, as Teddy Roosevelt once famously pointed out. Each state has a cadre of trained experts at the ready prepared to assist and support the Federal OPS in its task of ensuring pipeline safety. The Federal OPS should integrate the states into the IMP. States submit detailed work plans to the Federal OPS every year, in which they propose a plan of action for the review and inspection of interstate pipelines within Arizona. More often than not, what is received back from the Federal OPS is an entirely different plan. This is not consultation, it is not cooperative to ask for a plan and respond with an entirely different proposal. Each state has a unique understanding of its geography, climate, soil, and development. The Federal OPS should base its work plans on the proposals submitted by the States, not adopting them blindly, but rec-

ognizing the merits therein and incorporating them into the Federal vision.

Arizona's pipeline inspectors have acknowledged experience and expertise. I've attached to my remarks a summary of the intrastate and interstate pipeline inspections performed by commission employees. Between December 27, 1999, and August 31, 2000, the Federal OPS revoked the Arizona Corporation Commission's agent status and undermined our inspection of interstate pipelines. I thank the Senator for his efforts at reinstating our commission status. The Federal OPS should enhance rather than undermine the agent status of State pipeline inspectors.

Next issue, information sharing. The keeping of confidences is appropriate for doctors, lawyers, and priests, but there should be no secrets with pipeline safety. We can not ensure the safety of the public and protect the integrity of our Nation's pipelines if State and local officials are not provided timely information. Critical facts are too voluminous, the risks too great, and the potential impacts of terror too substantial not to insist on cooperation and a sharing of information. The Federal OPS and pipeline operators must share operational data with State officials and immediately notify those officials of any potential danger to public health and safety for pipeline operations.

In two recent cases, Southwest Gas Corporation requested opinions from the United States Department of Transportation on interstate operations with Arizona. In neither case did the Federal agency notify or communicate with the Commission. The Federal OPS should timely notify the states when requests for opinions concerning pipelines within their boundaries are received. States must be allowed to submit their comments on those requests before the OPS renders its opinion.

In the case of Kinder Morgan in 1996, the 8-inch and 12-inch pipelines were inspected with what is known as a smart pig device that is run through the pipeline inspecting for cracks, obstructions, and evidence of corrosion. The Arizona Corporation Commission was never informed of that inspection and never received a copy of the results, solely because the pipelines were interstate. A Kinder Morgan 6-inch interstate pipeline was "pigged" at the same time and over 5,000 anomalies were found in a 117-mile section. There is no justifiable reason for failing to share the results of inspections within a state. The Federal OPS should provide timely copies of all inspection reports to the states.

Final issue is encroachment. Entitlements relative to real estate construction in the vicinity of intrastate and interstate pipelines are governed by county and local zoning authorities. However, public safety demands that we address this issue and not simply pass the buck to cities, towns, and counties. No residences should be built within 200 feet of a high-pressure 8-inch or 12-inch gasoline pipeline. In Tucson, the homes were 37 feet from the pipeline. Within minutes, over 6,000 gallons of gasoline had soaked several residences. We can only thank God that the homes were unoccupied, but we must recognize the danger.

Real estate construction involves the use of heavy machinery and excavation. Back hoes have been known to rupture or demolish even the sturdiest pipe. Heavy construction produces intense vibra-

tion and impacts soil composition, both of which jeopardize underground pipe. I understand that some real estate developers seek to squeeze every nickel out of entitled land, but residential development within 37 feet of a 50-year-old gasoline pipeline is intolerable.

The Federal and State governments must step forward with appropriate restrictions where counties and cities do not act. Federal OPS should work with the cities to develop excuse me—work with the states to develop clear guidance for counties and cities on the dangers and locations of pipelines to preclude residential zoning within 200 feet thereof.

In conclusion, Mr. Chairman, on behalf of the Commission and its very experienced and aggressive pipeline safety inspectors, I am grateful to the Senate for convening this hearing. The many public recriminations and press releases since August have not done much to protect public safety nor improve Arizona's energy infrastructure. Beginning with this hearing, Senator, the stakeholder process for solving these problems commences. My recommendations today are designed to address those solutions in collaboration with Federal, State, and local governments and the private sector. The needs are great and this moment is the time to act. Senator, thank you very much.

[The prepared statement of Mr. Spitzer follows:]

PREPARED STATEMENT OF MARC SPITZER, CHAIRMAN,  
ARIZONA CORPORATION COMMISSION

#### **Respect the Federal Role but Improve Pipeline Safety through State Resources**

When I teach government classes I refer to the “healthy tension” created by our Founding Fathers between the branches of government as well as between the States and the National Government. When this tension becomes unhealthy, government becomes dysfunctional. As a four-term state legislator and now as a state regulator, I have occasionally chafed under unfunded Federal mandates. However, as an elected official asserting state prerogatives my efforts must be productive rather than destructive. Mindless rants against Washington, whether from the left or the right, and feigned ignorance of Article VI of the Constitution serve no purpose.

One of our tasks today is to contribute in a meaningful way. The people whose homes were doused with gasoline do not care to hear us shout accusations. The mother who waited in a gas line does not want to hear us blaming each other like children. The public expects solutions from us. I will offer my suggestions to that end, in the hopes that they add to the discussion and perhaps help us all to find a resolution.

The transportation of hazardous liquids through interstate pipelines is unquestionably interstate commerce, and the United States has asserted jurisdiction within United States Code Title 49. That does not mean that the exercise of Federal authority over interstate gasoline pipeline has always been wise—it has not. I offer herein suggestions for the Federal Office of Pipeline Safety to work more openly and collaboratively with our Commission's pipeline safety inspectors and other state agencies. But we must recognize Federal statutory authority and the chaos that would ensue if the states enacted fifty different interstate pipeline codes. For example, were California to mandate annual hydrostatic testing of all interstate pipelines, Arizona's perilous supply of vital commodities would be shut down. Such caprice is neither sound nor necessary for the protection of public safety. My proposals reflect the healthy tension between the Federal OPS and the State of Arizona to accommodate all interests, the most important being public safety and the free flow of goods in commerce.

#### **Infrastructure Challenges and Systemic Improvement**

Arizona has virtually no crude oil production and refines no gasoline. Similarly, Arizona has no known deposits of natural gas and, as of this date, no natural gas storage facilities. Arizona is dependent on two pipeline systems for natural gas and



but one pipeline system for gasoline. These circumstances are unacceptable and all parties, state and federal, public and private, and the people of Arizona must collectively resolve this problem.

The Corporation Commission convened a series of workshops and public meetings to deal with our natural gas infrastructure, or more precisely our lack thereof. For several years now the Commission has spent time and resources seeking additional natural gas pipeline capacity. Arizona's Congressional delegation has been extremely helpful in dealing with the FERC, including the pending litigated case over Arizona's allocation from the El Paso pipeline system. However, the Commission has zero regulatory authority with regard to gasoline prices and supply. Much more must be done to ensure redundancy of energy capacity and proper repair and maintenance of existing pipelines. *The Federal Government through its agencies must recognize the need to enhance Arizona's energy infrastructure.*

Arizona's utter dependence on gasoline and natural gas pipelines, and the imperative of public safety, require that the Commission's pipeline safety inspectors be allowed to participate more openly in the oversight and inspection of pipelines. The Integrity Management Program ("IMP") is an example where more could be done. Under IMP, states are permitted to observe the Federal OPS and the pipeline operator. Observation is not participation—as Teddy Roosevelt once famously pointed out. Each state has a cadre of trained experts at the ready, prepared to assist and support the Federal OPS in its task of ensuring interstate pipeline safety—*The Federal OPS should integrate the states into the IMP.*

States submit detailed "Work Plans" to the Federal OPS every year, in which they propose a plan of action for the review and inspection of interstate pipelines in the state. More often than not, what is received back from the Federal OPS is an entirely different plan. This is not consultation—it is not cooperative to ask for a plan and respond with an entirely different proposal. Each state has a unique understanding of its geography, climate, soil and development—*The Federal OPS should base its work plans on the proposals submitted by the states, not adopting them blindly, but recognizing the merits therein and incorporating them into the Federal vision.*

Arizona's pipeline inspectors have acknowledged experience and expertise. Attached as Exhibit A is a summary of the intrastate and interstate pipeline inspections performed by Commission employees. Between December 27, 1999 and August 31, 2000 the Federal OPS "revoked" the Arizona Corporation Commission's "agent status" and undermined our inspection of interstate pipelines. I thank the Senator for his efforts reinstating our Commission's status. *The Federal OPS should enhance rather than undermine the agent status of state pipeline inspectors.*

### **Information Sharing**

The keeping of confidences is appropriate for doctors, lawyers and priests, but there should be no secrets with pipeline safety. We cannot ensure the safety of the public and protect the integrity of our Nation's pipelines if state and local officials are not provided timely information. Critical facts are too voluminous, risks too great and potential impacts of terror too substantial not to insist on cooperation and a sharing of information. *The Federal OPS and pipeline operators must share operational data with State officials, and immediately notify those officials of any potential danger to public health and safety from pipeline operations.*

In two recent cases, Southwest Gas Corporation and the City of Mesa requested opinions from the U.S. Department of Transportation on intrastate operations occurring in Arizona. In neither case did the Federal agency notify or communicate with the Commission. *The Federal OPS should timely notify the states when requests for opinions concerning pipelines within their boundaries are received—states must be allowed to submit their comments on those requests before the OPS renders its opinion.*

In the case of Kinder Morgan, in 1996 the 8-inch and 12-inch pipelines were inspected with a "smart pig" device that is run through the pipeline inspecting for cracks, obstructions and evidence of corrosion. The Arizona Corporation Commission was never informed of that inspection and never received a copy of the results—solely because the pipelines were interstate. A Kinder Morgan 6-inch intrastate pipeline was 'pigged' in 1999—over 5,000 anomalies were found in a 139-mile section. There is no justifiable reason for failing to share the results of inspections within a state—*The Federal OPS should provide timely copies of all inspection reports to the states.*

### **Encroachment**

Entitlements relative to real estate construction in the vicinity of intrastate and interstate pipelines are governed by county and local zoning authorities. However, public safety demands that we address this issue and not simply "pass the buck"

to cities, towns and counties. No residences should be built within 200 feet of a high pressure 8-inch or 12-inch gasoline pipeline. In Tucson, the homes were 37 feet from the pipeline. Within minutes over 6,000 gallons of gasoline had soaked several residences. We can only thank God that the homes were unoccupied—but we must recognize the danger.

Real estate construction involves the use of heavy machinery and excavation. Backhoes have been known to rupture or demolish even the sturdiest pipe. Heavy construction produces intense vibration and impacts soil composition, both of which jeopardize underground pipe. I understand some real estate developers seek to squeeze every nickel out of entitled land, but residential development within 37 feet of a fifty-year old gasoline pipeline is intolerable. The Federal and state governments must step forward with appropriate restrictions where counties and cities act irresponsibly. *The Federal OPS should work with states to develop clear guidance for counties and cities on the dangers and locations of pipelines to preclude residential zoning within 200 feet thereof*

#### **Conclusion**

On behalf of the Commission and its pipeline safety inspectors I am grateful to the Senator for convening this hearing. The many public recriminations and press releases since August have done nothing to protect public safety nor improve Arizona's energy infrastructure. Beginning with this hearing, Senator, the stakeholder process for solving these problems commences. My recommendations today are designed to address those solutions in collaboration with federal, state and local governments and the private sector. The needs are great, and this moment is the time to act.

The CHAIRMAN. Thank you very much, Commissioner. Mayor Walkup, welcome.

#### **STATEMENT OF HON. BOB WALKUP, MAYOR, CITY OF TUCSON**

Mr. WALKUP. Thank you. Mr. Chairman, thank you very much for the opportunity to testify on behalf of the City of Tucson and our over 500,000 city residents and some 900,000 residents of the greater Tucson area. The rupture of the Kinder Morgan pipeline on July 30, 2003, exposed a number of shortcomings in Arizona's fuel delivery system, regulatory system, and disaster preparedness system. The rupture itself placed adjacent residents in physical danger. We were very, very lucky that the escaping fuel did not ignite and no one was injured. A number of homes were doused with fuel and had to be demolished.

I want to recognize the professionalism and dedication of the Tucson Fire Department, led by Chief Dan Newburn, who is here today with us. They helped avert a major catastrophe for the City of Tucson. Many residents in the vicinity of the pipeline were not aware of the pipeline's existence. There is no consistent or adequate form of disclosure that informed residents or homeowners in the proximity to the pipeline. Now some of these residents are demanding that Kinder Morgan build a new pipeline around the developed cities. The City of Tucson lacks the authority to require of Kinder Morgan a new pipeline in a remote location, so we request that our State and Federal governments work on our behalf.

The inability of the Tucson Fire Department officials to have access to Federal or State inspection results prior to the pipeline rupture compromised public safety. The sudden and dramatic increase in gasoline prices in Tucson was caused in part by the traffic at the Tucson terminal. Both Phoenix and Tucson delivery trucks had to wait long periods of time to receive fuel. Therefore, the supply problem in Phoenix caused a supply problem in Tucson and a steep increase in prices.

The realization of Tucsonans and many Arizonans that the state is mostly served by one major pipeline was and still is a cause of great concern. We now see that accidental or intentional shutdown of this one pipeline can disable our State.

With these situations in mind, the following courses of action should be pursued. First, more disclosure of pipeline integrity test results between government agencies is needed. At the very least, local public safety agencies must be notified if Federal or State regulators discover anomalies in the condition of the pipeline. Disaster readiness plans that account for a variety of potential situations must be developed in partnership with regulatory agencies at various levels and with pipeline companies.

Second, the relationship between Arizona Corporation Commission and the U.S. Department of Transportation should be clarified. Both entities should have access to test results and maintenance schedules regardless of which agency is doing the actual testing of the pipelines. The State Department of Real Estate should develop consistent and clear disclosure requirements of real estate transactions in proximity to the line.

Fourth, local government must do more to impose land use restrictions that provide reasonable security to the area homes and businesses. In Tucson's case, the 8-inch pipeline was placed in 1955 in an area that was mostly undeveloped at the time. Since then, previous mayors and city councils allowed development in those area. Tucson's city council has now voted to look at land use restrictions for future development near pipelines, and the city council has expressed interest in the possibility of Kinder Morgan or other pipeline companies constructing new pipelines outside the city limits. We realize that this wasn't a reasonable, safe, or timely option with the existence pipeline in light of the crisis faced in the state and the immediate need to replace the deficient pipeline.

However, the people of Tucson would like the State and Federal assistance in this matter. We understand that the existing pipeline must be replaced in its current location if the deficient pipeline is to be replaced at all. However, we hope that future pipelines will be constructed through undeveloped areas of our State. This may allow us to decommission existing pipelines through residential neighborhoods.

And finally, and perhaps the most importantly, the construction and operation of more pipelines across the state is critical. Arizona can not be solely dependent on a single line. This is an economic reality and public safety reality and even a national security reality. Successful construction of new lines designed with sufficient security measures would provide more total fuel for the state and less dependency on one pipeline. In addition, we would hope and expect that new pipelines outside developed areas built with the sufficient capacity could make existing pipelines through the city neighborhoods obsolete.

And in closing I would like to thank you, Senator, and the Members of this Committee again for this hearing. I want to also commend the work of Governor Napolitano and her staff in addressing the crisis as soon as it happened. Her quick and appropriate response to the crisis made a very difficult situation better for all Arizonans. The Governor's southern Arizona staff led by Jan Leshner,

was always ready with information and assistance. I would also like to thank Tucson area State Representative Phil Lopez and Ted Downing and Councilman Steve Leal and other members of the Tucson city council. Together we have taken an active role in examining relevant issues. I also want to thank the Arizona Corporation Commission for its participation in a recent City of Tucson council meeting. Their staff did a good job in explaining the complexities of this issue.

And last, I would like to thank Kinder Morgan for working closely with Tucson city staff and Fire Department officials. Now there will be more commissions and time between us to really improve this situation in Tucson and in the State of Arizona. This has been a very difficult situation for all of us that have been involved. However, everyone I have worked with on this issue has been forthright and determined to fix what needs to be fixed. Thank you very much.

[The prepared statement of Hon. Walkup follows:]

PREPARED STATEMENT OF HON. BOB WALKUP, MAYOR, CITY OF TUCSON

Dear Senator McCain and Committee Members:

Thank you for the opportunity to testify on behalf of the City of Tucson, our over 500,000 city residents and the 900,000 residents of the Greater Tucson area.

The rupture of the Kinder Morgan pipeline on July 30, 2003 exposed a number of shortcomings in Arizona's fuel delivery systems, regulatory systems and disaster preparedness systems:

- The rupture itself placed adjacent residents in physical danger. We were very, very lucky that the escaped fuel did not ignite and no one was hurt. A number of homes were doused with fuel and had to be demolished. I want to recognize the professionalism and dedication of the Tucson Fire Department, led by Chief Dan Newburn. They helped avert a major catastrophe.
- Many residents in the vicinity of the pipeline were not aware of the pipeline's existence. There was no consistent or adequate form of disclosure that informed residents and homeowners of their proximity to the pipeline. Now some of these residents are demanding that Kinder Morgan build a new pipeline around the developed city.
- The inability of Tucson Fire Department officials to have access to Federal or state inspection results prior to the pipeline rupture compromised public safety.
- The sudden, dramatic increase in gasoline prices in Tucson was caused in part by the traffic at the Tucson terminal. Both Phoenix and Tucson delivery trucks had to wait long periods of time to receive their supply. Therefore, the supply problem in Phoenix caused a supply problem—and steep price increase—in Tucson.
- The realization for Tucsonans and many Arizonans that the state is mostly served by one major pipeline was—and still is—a cause of great concern. We now see that accidental or intentional shutdown of this one pipeline can disable our state.

With these situations in mind, the following courses of action should be pursued:

- More disclosure of pipeline integrity test results between government agencies is needed. At the very least, local public safety agencies must be notified if Federal or state regulators discover abnormalities in the condition of a pipeline. Disaster-readiness plans that account for a variety of potential situations must be developed in partnership with regulatory agencies at various levels and pipeline companies.
- The relationship between the Arizona Corporation Commission and the U.S. Department of Transportation should be clarified. Both entities should have access to test results and maintenance schedules regardless of which agency is doing the actual testing of the pipelines.
- The State Department of Real Estate should develop consistent and clear disclosure requirements on real estate transactions in proximity to the line.

- Local governments must do more to impose land use restrictions that provide reasonable security to area homes and businesses. In Tucson's case, the 8-inch pipeline was placed in 1955 in an area that was mostly undeveloped at the time. Since then, previous mayors and city councils allowed development in the area. The Tucson City Council has now voted to look at land-use restrictions for future development near pipelines. And the entire City Council has expressed interest in the possibility of placing new pipelines outside the city limits, even though we realize that this wasn't a reasonable, safe or timely option in light of the crisis facing the state.
- Finally, and perhaps most importantly, the construction and operation of more pipelines across the state is critical. Arizona cannot be solely dependent upon a single line. This is an economic reality, a public safety reality and even a national security reality. These new pipelines should be constructed outside populated urban areas and should be designed with sufficient security measures. Successful construction of new lines would provide more total fuel for the state and less dependence on any one pipeline. In addition, we would hope and expect that new pipelines outside developed areas could make existing lines through city neighborhoods obsolete.

In closing, I want to thank Senator McCain and the members of the Committee again for this hearing.

I want to commend the work of Governor Napolitano and her staff in addressing the crisis as soon as it happened. Her quick and appropriate response to the crisis made a very difficult situation better for all Arizonans. And Governor Napolitano's Southern Arizona staff, led by Jan Leshner, was always ready with information and assistance throughout the most difficult periods.

I want to thank Tucson area state representatives Phil Lopes and Ted Downing, Councilmember Steve Leal and all the members of the Tucson City Council. Together, we have taken an active role in discovering and examining the relevant issues.

I also want to thank the Arizona Corporation Commission for their participation at recent Tucson City Council meetings. Their staff did a good job explaining the complexities of these issues to our governing body.

And I would like to thank Kinder Morgan for working closely with Tucson city staff and Fire Department officials. Now there will be more communication between us, in addition to an improved pipeline.

This has been a difficult situation for all involved. However, everyone I have worked with on this issue has been forthright and determined to fix what needs fixing. I would be happy to answer questions from the Committee at this time.

The CHAIRMAN. Thank you very much, Mayor. Maybe we can start from the macro aspect of the issue, and maybe Commissioner Spitzer and Attorney General Goddard can enlighten us here. Is it obvious that Arizona needs a refinery?

Mr. GODDARD. Senator, I think it's obvious that we need, as many speakers have pointed out, some alternatives, some competition, some different ways to get gasoline supply into Arizona. A refinery is one of those answers. I think that would take some time to come online and the problem that I have, just off the top, is that if you're going to build a pipeline to Arizona, it seems to me you'd want to put refined gasoline in it, not crude oil, and the refinery would need the crude oil. But that's simply a personal opinion, I've not had a chance to run it by all of the various energy analysts, but I do believe it's absolutely necessary that the pipeline or some other—I know there's talk about bringing refined fuel from Mexico—the bottom line is that we have to have other ways to get critical energy resources into our State.

Mr. SPITZER. Senator, for a politician redundancy is a bad thing, but in energy I've learned on the Commission redundancy is a good thing, and I think the analogy would be—

The CHAIRMAN. I've never known a politician to practice redundancy.

[Laughter.]

Mr. SPITZER. Some of us, present company excluded. The way the Commission has worked on electricity in creating partnerships of all the stakeholders as well as consumer groups to ensure that the blackout that happened on the East Coast would not happen—we had an episode in August 1996, as you recall, and we created both within Arizona and outside entities to oversee reliability, and the key is redundancy, redundancy in production with power plants, redundancy in transmission, and we've done a good job in electricity. If one plant goes down or one transmission line goes down, we have back-ups. And we've sited power plants and high-voltage transmission lines, none of which anybody wants in their backyard, and there has been some controversy over some of those decisions, but ultimately the public interest was served.

We have not had that discussion on redundancy that we've had in electricity in the area of natural gas, nor have we had it in the area of gasoline. We need to have that discussion and whether it's a—I think the Attorney General's right—it will be a collective decision.

The CHAIRMAN. Do you agree?

Mr. SPITZER. Whether it's a refinery or——

The CHAIRMAN. Do you agree with his assessment that there will be less and less oil coming over from California?

Mr. SPITZER. That is clear. There is no question that the——

The CHAIRMAN. Well, our options then are more pipelines coming from the East or constructing our own facilities?

Mr. SPITZER. That would be the choice.

The CHAIRMAN. Those are our choice?

Mr. SPITZER. In my judgment, yes.

The CHAIRMAN. Do you agree, Mr. Goddard?

Mr. GODDARD. Mr. Chairman, yes sir.

The CHAIRMAN. I mean, it just seems to me we ought to be aware of what our choices here are because I think we need to take a number of measures to prevent a recurrence of this problem, and I intend to get this catastrophe and I intend to get into that, but it seems to me we ought to look at the overall problem and that seems to be that we have some tough choices to make especially if—and I agree with the Attorney General that there are going to be scarcer supplies coming from the West. I don't know from the East, Commissioner Spitzer, but we've got some pretty high growth areas to the east of us as well, so I just thought we ought to lay that out, because I think our constituents deserve to know that we have some pretty tough choices to make.

Mr. GODDARD. And Senator, if you look at that chart, we have global problems nationally with regard to the supply of gasoline. Refineries have not been built anywhere, as I understand, in the last 20 years, and so it's a serious supply problem with increasing demand, and that when supply is flat and demand increases, we know what happens.

The CHAIRMAN. Well, I'm straying from the subject of the hearing, but it also seems to me that then we ought to have another look at nuclear power, Palo Verde. I think you would agree, Commissioner, and I would be glad to hear your assessment, it seems to me it's been a resounding success. We still have the waste prob-

lem, but we've also developed technology that reduces that problem significantly, and I think that's one of the options that we ought to look at and I know that scares the daylights out of everybody, but the technology is there, and I wonder what your view is on that.

Mr. SPITZER. Well, one of the aspects that we look at in electricity supply and generation is what they call a balance portfolio, so we're not dependent, if natural gas is curtailed, we have not put all our eggs in one basket. And I think you pointed out we have the nuclear, we have coal facilities in eastern Arizona, we have new gas-fired plants. That is this redundancy that we've been talking about, so you're not captive to one break, and I think the message from all speakers has been infrastructure, information, and somehow how to deal with this very difficult, challenging problem of siting pipelines.

The CHAIRMAN. Well, hopefully—I receive a lot of suggestions and I appreciate all of them and maybe I could make a suggestion for this task force that the Governor has appointed that maybe they should look at the long-term energy requirements and challenges we face as well as the short-term.

Mr. Bonasso—and I know Ms. Gerard may want to respond to some of these questions—how do you respond to the specifics that Commissioner Spitzer made, particularly sharing information and consultation and encroachment?

Mr. BONASSO. We fully considered the views of the Arizona Corporation Commission. There's no question that they are our people on the ground in Arizona. We have delegated full responsibility to them for doing the inspections of pipelines, interstate pipelines in Arizona. We don't—I'm sort of—since we don't agree with what Mr. Spitzer said, we obviously have a breakdown in communication, so—

The CHAIRMAN. What do you disagree with?

Mr. BONASSO. Well, we are sharing information. Our people make contact. Our regional inspectors coordinate and communicate with the inspectors at the Arizona Corporation Commission. They've shared information extensively about this accident. The information—they have full authority to do inspections. Now, the question about enforcement and the levying of fines, that is something that OPS does.

So I feel that we need to do a little better communicating here, and I would like to ask Ms. Gerard to add whatever she would like to that.

Ms. GERARD. We certainly agree with the principles of everything that Commissioner Spitzer put forward, and there are certainly opportunities to improve communication. I think that there is a particular point as it regards the interpretation changes where we needed to make an improvement, we took action on that today to be able to immediately notify the state when there has been an interpretation made, and certainly there needed to be an improvement made in that area and that was correct.

The CHAIRMAN. But up until today you never even would tell the Corporation Commission how you acted after violations are noted. Is that communications?

Ms. GERARD. I'd have to disagree that that was totally correct. I think that there has been considerable information sharing and I think that we do act together and I think that we do——

The CHAIRMAN. Well let me ask, let me ask Commissioner Spitzer if you've been told how OPS has acted after violations are noted?

Mr. SPITZER. Senator, let me say that in fairness we've had some ups and downs between the Commission and OPS and you're aware of that period between 1999 and 2000 where it was a down period, it was prior to my tenure on the Commission. But in review of the record, there were serious problems. I think the OPS has improved since that time. They're not at the level that we would like, and there will be disagreements, there will be legitimate disagreements between our inspectors and OPS from time to time. I think our frustration was that we did not feel that our views were being it's one thing to, the difference between hearing and listening, and I guess that was our concern.

The CHAIRMAN. Mr. Bonasso, in 1997, as a result of a standard inspection performed by the Arizona Corporation Commission, OPS issued a corrective order to Kinder Morgan for five items of regulatory noncompliance. Based on the information that you provided this Committee, it took over 5 years for this order to finally be closed. Why? Ms. Gerard, if you feel more qualified to answer——

Mr. BONASSO. Well, I'm going to incorporate her as well, but I also want to say that a—there are a number of corrective action orders out now that remain open and it's the policy of OPS to keep those orders open even though the specific issues that are identified in those orders are taken care of very early on. It's mainly a process that we use to monitor. Now, about the specific item I will ask Ms. Gerard to comment.

Ms. GERARD. In this particular case there was 52 incidents of corrosion that were corrected by the company in the 1996/1997 timeframe, and in the 5 years that followed our completing the writing of the amendment, at no time was the pipeline unsafe. We were fully aware of what the condition of the pipeline was and that the repairs that were needed to be made were done. We had at the same time 11 other corrective action orders that we were working on with other pipeline companies where there was a much more immediate hazard to the population than there was in this case. The immediate hazard had been remedied long before the amendment was formalized.

In addition to that we were enforcing the integrity management regulations and had been inspecting Kinder Morgan under the new integrity management regulations and making enforcement actions in that case. It also was the time of 9/11. The hearing in question was the month before 9/11 and we had an enormous task to evaluate the protection of the critical infrastructure in all the other pipelines at the same time, so our point is that the immediate hazard was already remediated long before the amendment was written.

The CHAIRMAN. Was Kinder Morgan's voluntary shutdown of the line solely due to safety concerns?

Mr. BONASSO. It appears to us that it was. I know of no other reason why they would shut it down.



The CHAIRMAN. If so, why did Kinder Morgan know—what did they know that the Office of Pipeline Safety didn't, since OPS only required the operator to reduce its operating pressure to 80 percent?

Mr. BONASSO. The requirement to reduce the operating pressure to 80 percent was when the initial concept of the failure was that it was a seam failure on the pipe. When it was discovered that the failure was not a seam failure due to corrosion, Kinder Morgan immediately decided to hydro-test pipe. Once they hydro-tested the pipe, they determined that there were other problems that were similar to this stress corrosion cracking that had occurred, and at that point is when the decision to shut down the pipeline and replace those sections took place. So they actually did some field testing of the equipment to determine whether or not it should be shut down.

The CHAIRMAN. Thank you. Attorney General Goddard, I understand you have to leave to track down some criminals and we appreciate you being here.

Mr. GODDARD. Thank you very much, Mr. Chairman. I'll get right on it.

The CHAIRMAN. Thank you very much for your participation and we appreciate very much all the work you've done. Mr. Bonasso, did Kinder Morgan meet the 30-day deadline for submitting a written plan with corrective measures as required by OPS' corrective action order?

Ms. GERARD. No, they did not, but at the time the order was written, we did not know that stress corrosion was the phenomenon that caused the accident, and we contacted the president of the company orally and began to give him by phone the guidance that we wanted him to use to begin evaluation for stress corrosion cracking. At that time incidents of stress corrosion cracking were so rare on a pipeline of this type that we really had to consider what protocol should be used very thoroughly, because it is a relatively unknown phenomenon on hazardous liquid pipelines.

The CHAIRMAN. Have they submitted it yet?

Ms. GERARD. Yes, they have submitted it in pieces and we're still working to make sure the plan meets our standards.

The CHAIRMAN. Has the plan been completed in its entirety?

Ms. GERARD. Not entirely to our satisfaction.

The CHAIRMAN. How can you decide whether it meets your standards if it hasn't been submitted?

Ms. GERARD. They've submitted it. We find that it needs some adjustments still. They have submitted the plan.

The CHAIRMAN. In reports issued in 2000 and 2001, the General Accounting Office criticized OPS' practice in the 1980s of issuing warning letters and letters of concern rather than issuing fines. In 1998, OPS decreased the proportion of enforcement action in which it proposed fines from 49 percent to 4 percent. What fines has Kinder Morgan been assessed by OPS?

Ms. GERARD. I know that there have been four cases following Arizona inspections.

The CHAIRMAN. Are there any fines been imposed on Kinder Morgan?

Mr. BONASSO. There had been one \$3,000 fine imposed in 1998.

The CHAIRMAN. Is the division of duties between OPS and the Arizona Corporation Commission identical to OPS' relationship with all states or do you have different arrangements with other States?

Ms. GERARD. We have interstate agent states. There are 15 of them. All of them have identical relationships with us, and the balance of the states have authority for inspecting the intrastate. They also the states that are in the intrastate program, which is the vast majority of them, also do the enforcement on the intrastate cases.

The CHAIRMAN. Is it true that you have not issued an order required the dates certain replied and Kinder Morgan had not replied by the deadline and OPS didn't issue any further official document or impose a fine or anything? Is that true?

Mr. BONASSO. Relative to this incident?

The CHAIRMAN. Yes.

Ms. GERARD. We amended we amended the corrective action order on the 6th to put in the guidance that we thought was necessary for the stress corrosion cracking evaluation.

The CHAIRMAN. And no fine has been levied?

Ms. GERARD. And we've given them a new deadline. No, no fine has been levied.

The CHAIRMAN. Mayor, I want to thank you. I just want to mention just one other aspect of this problem though. I'm sure you have the same thing that I've seen here in the valley and that is the growth of the valley as it's going to take place similarly, it's going to happen in Tucson and Pima County. And you mentioned that a pipeline was laid in 1995, I believe.

Mr. WALKUP. 1955.

The CHAIRMAN. 1955, excuse me, 1955, and it was in a remote area. How do you if you lay a pipeline now someplace in a remote area, 50 years from now it's not going to be in a remote area. How do you do this? Isn't it a little more reasonable to talk about Commissioner Spitzer's proposal that a 200-foot, 400-foot, or whatever it is, boundary should be imposed as opposed to trying to find a remote area? Out of the pictures I've seen of this valley you're going to have to go a long, long way before you're in a remote area and that remote area is probably Federal land or a wilderness area.

Mr. WALKUP. There's kind of two emerging issues, that we have about 12 to 13 miles that are currently in the city. The vast majority of the pipeline runs through commercial areas along have sufficient right of ways to keep it away from residential areas. It's only as it gets over into the western side of our community does it really start bumping up against residents that are within 30 to 50 feet of it. I think—

The CHAIRMAN. With all due respect, we used to have all the growth to the east too.

Mr. WALKUP.—I understand. But clearly to me and to the majority of the council, the first order of business is get the pipe repaired that is in the ground and you do that by hastily putting in the new pipe that is up to modern standards, adjusting the testing and maintenance procedure. At that point, that's why I say I think that it's important that we work with Kinder Morgan, we work with the State to see if there's an alternate location that is away from residential areas, not necessarily, Senator, in the Western desert.

Maybe there's the possibility of running it along I-10. Rather than bringing it over west, maybe we can take it down I-10. So I haven't excluded personally the opportunity to look at a further location that keeps it out of the way of schools and residential areas, and in the process we also need to know what is the safe distance that any new construction that is going to be done in and around the existing pipeline is kept safe.

So I think we've got a number of options, but the first and foremost is get the current 8-inch repaired either through repair of the pipe or the replacement of the pipe with the 12-inch.

The CHAIRMAN. Commissioner Spitzer, I know it's not it's out of the area of your present expertise—

Mr. SPITZER. Lots of things are, Senator.

The CHAIRMAN. Do you want to comment on that issue again?

Mr. SPITZER. Well, our process for siting high-voltage transmission lines and power plants is one of attempting to provide as much notice in advance to the people where and we have this growth issue, so we have power lines that are needed in the north part of Phoenix and in the west part, and we mark those lines and give notice to the citizens as much as affordable.

But in that context we still must make tough choices, and in those tough choices there—I think the folks that have lived in a community for 50 years are entitled to a little bit more respect in terms of their property rights and their aesthetic, even if it's not a health and safety issue, it's aesthetics, due matter. They're entitled to more protection of the law than, let's say, a real estate speculator who just wants to build the next Taj Mahal somewhere in the west valley and objects to a very necessary power line.

This is a debate that's gone on for a long time, but the statutes in Arizona I think are instructive. We have a line siting committee, the Chair of which is the designee of the Attorney General of Arizona. There are a number of lay people as well as folks from State agencies that are in that panel, and the Commission reviews the deliberations of that Committee and we've been able to achieve our objectives. It requires some tough decisions, but notice in advance and participation from a wide universe of people has been able we've been able to get the necessary infrastructure in place, and that may be the model that we'd adopt.

I'd also point out that my proposal is a balance. I'm not proposing that the Federal Government usurp the local zoning authority from the City of Tucson or from Pima County in this particular case. I'm suggesting that we establish baseline standards, and it doesn't have to be a formal regulation, it could be a notice that would be published that puts the zoning authorities and the developers on notice that building a house 37 feet from a pipeline is not a good practice and if something goes wrong there is serious liability. That's the best deterrent I see.

The CHAIRMAN. Mr. Bonasso and Ms. Gerard, what is your confidence that we will not see a repeat of this catastrophe here in the State of Arizona?

Mr. BONASSO. Senator, we're learning more every day about what it takes to keep a pipeline safe. We're sharing that information. We're doing a study that will offer some guidance to public officials like Mr. Spitzer and the mayor on the issues that they're

dealing with. I think that the enhanced level of inspection, the greater cooperation we have with Arizona, I believe that the inspection levels that we're—and the IMP, certainly the integrity management process that you acknowledged and pioneered I think is a very, very important tool in doing this. And I think that this is like any other aging piece of infrastructure: the more we know about, the more we're able to make sure that accidents don't occur with it.

The CHAIRMAN. Is the pipeline—do you want to comment, Ms. Gerard?

Ms. GERARD. Yes, I wanted to say that all the inspections in the world wouldn't have helped to stop this particular accident because the phenomenon is not one that we currently have a technology to be able to find. But as a result of the Pipeline Safety Act and the research program which is provided we are funding studies into this phenomenon already, and with a better ability to detect and a better ability to have criteria to be able to identify this in a risk study we'll be ahead of the game soon. The technology has to be there, it isn't just an inspection function.

The CHAIRMAN. You're saying that the reason why all the inspections wouldn't have handled it is because the cause was a stress—was stress crack corrosion?

Ms. GERARD. Yes.

The CHAIRMAN. So what are we doing to make sure that we can detect?

Ms. GERARD. We have three different projects underway prior to the accident—excuse me two prior to the accident to begin to look at modifying internal inspection devices to be able to find this kind of a phenomenon. So it's going to take us a little bit of time to get there but that research is necessary in order to improve the technology. A few years ago we couldn't accurately find the external corrosion that we can find today, so the technology is making a big difference and it's very important that it be funded and supported.

The CHAIRMAN. Well, I did note we have dramatically increased the amount of Federal funding, maybe you might want to mention that, Mr. Bonasso.

Mr. BONASSO. Well, I have in my testimony indicated that there has been a truly significant increase in funding for the Office of Pipeline Safety. It went from \$60 million or \$47 million to \$63 million in the last 5 years and there is an increase to \$73 million in the 2004 budget. So the Office of Pipeline Safety is the fastest growing department in the Department of Transportation. It's—one of the things that we're challenged by is finding enough people to do the work that we've been funded to do.

The CHAIRMAN. What's the average age of liquid pipelines in the United States?

Ms. GERARD. Off the top of my head I'm going to say the majority of them are about the same age as Kinder Morgan, in that they were built in the 1950s to 1970s timeframe.

The CHAIRMAN. Regulations for integrity management require that after completion of the initial baseline inspection liquid pipelines be internally inspected every 5 years. It seems to me that the intervals between integrity management inspections should be based on risk, including the age of the pipeline and other factors.

Ms. GERARD. That's exactly what we think and that is how the regulation is written. The 5-year is a minimum threshold.

The CHAIRMAN. All right. I want to thank the witnesses. Thank you for being here. Thank you. Please extend our condolences to the citizens of Tucson that experienced this catastrophe and our relief that it wasn't worse, Mayor Walkup.

Mr. WALKUP. I will certainly do that.

The CHAIRMAN. Thank you all, thank you very much. Our last panel is Mr. Thomas Bannigan, President of Kinder Morgan Product Pipelines; Mr. David Cowley, the Director of Public Affairs, AAA Arizona; and Mr. Jonathan Olcott, Attorney at Law, Olcott and Shore, on behalf of the Silver Creek Homeowners Association. Welcome to the witnesses. We'll begin with you, Mr. Bannigan.

**STATEMENT OF THOMAS A. BANNIGAN, PRESIDENT,  
KINDER MORGAN PRODUCTS PIPELINES**

Mr. BANNIGAN. Thank you, Mr. Chairman. I appreciate the opportunity to appear before the Committee today and address issues involving Kinder Morgan's pipeline operations in Arizona, including the July 30 release from our 8-inch Tucson-Phoenix pipeline. I would also like to address our safety record and interaction with the Office of Pipeline Safety and the Arizona Corporation Commission. With your permission, Mr. Chairman, I will summarize my written testimony, which has been submitted for the record.

Kinder Morgan owns and operates nearly 10,000 miles of products pipelines transporting 2 million barrels per day of refined petroleum products, including gasoline, diesel, and jet fuel, both commercial and military grades. We own or operate products pipelines in 21 states. Kinder Morgan is headquartered in Houston, Texas. We acquired the pipelines that serve Arizona markets in March 1998 as part of our acquisition of Santa Fe Pacific Pipelines Inc.

Pipelines are the safest and most efficient means of delivering petroleum products from refineries to end users. The experience of Kinder Morgan and the companies which preceded it in the State of Arizona reinforces that fact. In the 48-year history of product pipelines serving Arizona, there have been no reported deaths or injuries to the public. In the 5 years and 6 months during which Kinder Morgan has owned and operated these pipelines, we have transported over 440 million barrels of petroleum products to Arizonans.

During this period there have been three releases from our pipelines. Two were due to damage caused by third parties striking the pipelines, and the third the high pH stress corrosion cracking incident on July 30. With respect to that incident, the released was identified by our controller in Orange, California. The line was shut down within 3 minutes of receiving an indication of abnormal condition through our SCADA system. The volumes not recovered from the July 30 release represent one-ten-thousandth of 1 percent of the volumes Kinder Morgan has transported over these lines since acquiring them in 1998. Nonetheless, one gallon out of our pipelines is one gallon too many. We take seriously our commitment to operate a safe and reliable pipeline system and we strive for operational excellence and incident-free operations.

Protection of our employees, the public, and the environment in which we operate creates this drive. Moreover, our financial interests are best served by operating safely. Service disruptions cost our business, for we only make money if we can move products from point A to point B. Releases bring with them a host of unacceptable consequences, from response cost and environmental remediation expenditures to litigation, which more frequently these days can have both civil and criminal components. Injuries or death arising from an incident can undermine a company's reputation, its franchise to do business, as well as impede its ability to grow its business in states within which it operates.

The decision to temporarily shut down the 8-inch pipeline on August 8 was the safe and prudent course of action. A fundamental principle that we constantly emphasize to our operations personnel is as follows: if in doubt, shut the pipeline down and restart the line only after the doubts have been eliminated. High pH stress corrosion cracking has never been experienced on a Kinder Morgan refined products pipeline and in our judgment the line had to be hydrostatically tested to ensure that it could be operated safely. Although the resultant service disruption inconvenienced consumers, far greater would have been the criticisms and consequences of continuing to operate the line and having another release such as the one on July 30.

Kinder Morgan demonstrated its flexibility and responsiveness to the temporary shutdown of its 8-inch Tucson to Phoenix pipeline. During the weekend following the shutdown, we had modified terminal facilities in Tucson to allow Arizona CBG gasoline to be trucked to the Phoenix market. That same weekend our shippers were notified of the service disruption and we worked with them to reschedule additional products into Phoenix over the west line, which originates in California.

In the week following the shutdown, Kinder Morgan's efforts allowed over 92 percent of the average daily demand in Phoenix to be met. Demand, however, had spiked during the service disruption and exacerbated the supply shortfall. Nonetheless, despite the service disruptions in August, Kinder Morgan actually transported 13 million more gallons of gasoline into the Phoenix market than it had transported the preceding August.

Our commitment to safety is highlighted by our integrity management plan. This plan, which involves the assessment of pipeline integrity through internal inspection devices known as smart pigs was begun by Kinder Morgan's predecessor and continued by us. These pigs are very effective in detecting pipeline defects such as external corrosion and dents and gouges on a pipeline.

Approximately 95 percent of Kinder Morgan's 3,325 miles of active pipelines in our Pacific operations have been internally inspected to date. Almost 94 percent of these miles were internally inspected before the effective date of DOT's integrity management program rules became effective in March 2001.

We were internally inspecting pipelines in Arizona before such actions were ever required by the Government. In fact, all Kinder Morgan pipelines in Arizona have been smart-pigged at least once before the effective date of the IMP rule and most have been smart-pigged at least twice. The 8-inch Tucson to Phoenix pipeline

was inspected in 1996 and 1999 and the 6-inch Phoenix to Tucson pipeline in 1999 and again in 2003.

It is important to note that while internal inspection tools used by Kinder Morgan can detect wall loss due to generalized corrosion, these tools are not yet capable of identifying high-pH stress corrosion cracking in small-diameter pipelines. The technology to detect SCC phenomenon exists for large-diameter pipelines, but it has not yet been miniaturized to accommodate smart pigs in pipelines with diameters as small as 6-inch as 8-inch.

There has been testimony about the existence of generalized corrosion on pipelines and the responses of Federal and State agencies. Several facts bear noting. First, the evidence of generalized corrosion was identified by Kinder Morgan as part of its voluntary integrity management program just referenced. Operating pressures on the lines were reduced by the decision of the company until repairs were made.

Second, the generalized corrosion identified was not the result of active ongoing corrosion, but rather the result of corrosion occurring in a 2-year period after construction in 1956 and before appropriate cathodic protections were installed in that pipeline. Third, the absence of active corrosion was demonstrated in over 50 tests in research that was submitted to the Department of Transportation and the Office of Pipeline Safety.

Fourth and finally, the history of corrosion releases on pipelines in Arizona provides compelling evidence of the effectiveness of the cathodic protection of our pipelines. There has not been a corrosion-related release on the 8-inch Tucson to Phoenix pipeline since 1980, on the 6-inch Phoenix to Tucson pipeline since 1988. There have been no reported corrosion releases in the history of the El Paso to Tucson 12-inch and 8-inch pipelines, nor the Colton, California to Phoenix 20-inch pipeline.

Although Kinder Morgan believes and understands the respective roles and responsibilities of the Office of Pipeline Safety and the Arizona Corporation Commission in regulating our interstate pipeline facilities, the company has been caught at times between the competing positions of staff members of ACC and the OPS. OPS clearly has primacy with respect to interstate pipelines and ensuring that a common nationwide framework of safety regulation exists. We encourage ACC's involvement with inspections, public education, siting, and notice requirements involving utilities, as well as promoting the excellent blue state damage prevention program in Arizona.

All parties have a role to play in ensuring public safety. We believe we have an excellent safety record in the State of Arizona and we look forward to providing the citizens of Arizona with safe and efficient pipeline operations for many years to come. Thank you, Mr. Chairman.

[The prepared statement of Mr. Bannigan follows:]

PREPARED STATEMENT OF THOMAS A. BANNIGAN, PRESIDENT, KINDER MORGAN  
ENERGY PARTNERS L.P. PRODUCTS PIPELINES

#### **Introduction**

Mr. Chairman, members of the Committee, my name is Tom Bannigan. I am President of Kinder Morgan Energy Partners Products Pipelines. Kinder Morgan

owns and operates nearly 10,000 miles of products pipelines transporting 2,000,000 barrels per day (b/d) of refined petroleum products including gasoline, diesel and jet fuel (commercial and military). We own or operate products pipelines in 21 states. Kinder Morgan is headquartered in Houston, Texas.

I appreciate the opportunity to appear before the Committee and address issues involving Kinder Morgan's pipeline operations in Arizona, including a July 30, 2003 release from our 8" Tucson to Phoenix pipeline, our safety record and interactions with the Office of Pipeline Safety (OPS) and the Arizona Corporation Commission (ACC).

#### **Kinder Morgan Energy Partners, L.P.'s Assets in Arizona**

Kinder Morgan owns and operates interstate common carrier pipelines that serve the Arizona market. These assets were acquired from Santa Fe Pacific Pipeline, Inc. in March 1998. A map of our Pacific operations is included as Exhibit 1 of this testimony. Phoenix and Tucson are served by pipelines that originate at refining/import centers in the Los Angeles basin and West Texas and New Mexico. The West Line is a 20" diameter pipeline constructed in 1985, 1988 and 1989 which transports products from Kinder Morgan's Colton, CA tank farm to Phoenix, AZ. It has an average daily capacity of 204,000 b/d. A 6" pipeline begins in Phoenix and transports products originating in Southern California to the Tucson market. This line was constructed in 1956 and has an average daily capacity of 14,000 b/d. Two pipelines, 12" and 8" in diameter, originate in El Paso, Texas and deliver product to Tucson, AZ. The 8" line was constructed in 1955 and the 12" line in 1964. The lines have an average daily capacity of 94,000 b/d.

The 8" line extends from Tucson to Phoenix and it was "looped" (expanded) in several segments so that it is comprised of both 8" and 12" segments. The 12" segments were installed in 1992. Kinder Morgan also owns and operates pipelines that deliver military jet fuel to Yuma Marine Corps Air Station, Luke AFB and Davis-Monthan AFB.

Kinder Morgan also owns and operates a petroleum terminal and truck rack at Phoenix and Tucson. Our market share in Phoenix (based on a percentage of products transported through the pipeline) is 28 percent. Five other oil companies own terminals in the Phoenix market. Our market share in Tucson is approximately 37 percent. Two other oil companies own terminals in the Tucson market.\*<sup>1</sup> Kinder Morgan only provides transportation and storage services. We do not market or sell petroleum products.

Kinder Morgan charges a tariff for transporting each barrel (42 gallons) of petroleum products through its pipelines. The tariffs are subject to economic regulation by the Federal Energy Regulatory Commission. It costs a shipper approximately 2 cents per gallon to transport a gallon of gasoline from El Paso to Phoenix and approximately 3 cents from Los Angeles to Phoenix. The tariff charged is not linked to the price of gasoline. If retail prices are \$1.50 per gallon or \$2.25 per gallon, Kinder Morgan receives no more than the 2 cents or 3 cents FERC tariff for each barrel transported. Kinder Morgan does not own the products it transports; it merely assumes custody of the refined product during its transportation. Each month, our shippers nominate volumes of product to be transported the following month through our various pipelines. In the case of the Arizona markets, shippers can nominate products from either, or both, California and West Texas/New Mexico sources. It is their choice.

The average daily demand for all refined products in the Phoenix market is approximately 175,000 b/d. The average daily demand for the Tucson market is approximately 45,000 b/d. Because Phoenix is a non-attainment area under the Clean Air Act, boutique gasoline fuels are used in the summer (March–October) and winter (October–March) to reduce ozone precursors. The summer grade gasoline is referred to as Arizona CBG (Clean Burning Gasoline) and the winter grade is called AZRBOB (Arizona reformulated blendstock for oxygenate blending). Ethanol is the oxygenate used in the Phoenix market in the winter. It is transported by rail or truck to the terminals and blended into the gasoline at the local terminals. Tucson is not a non-attainment area under the Clean Air Act, so this market uses conventional gasolines. (Conventional gasoline is also delivered to the Phoenix market for use outside of Maricopa County.)

Approximately 70 percent of all products delivered into Phoenix are transported through the West Line. The remainder (30 percent) is transported through the East Line. Exhibit 2 provides the percentages of boutique gasolines (CBG and AZRBOB) and conventional gasolines transported to Phoenix from the West Line and East

<sup>1</sup>On October 1, 2003, Kinder Morgan acquired the former Shell Oil Products U.S. terminals at Phoenix and Tucson.



Lines. As the table illustrates, refineries in both California and West Texas/New Mexico have produced boutique and conventional fuels for Phoenix.

#### **Safety Regulation and Safety Record**

Kinder Morgan is proud of our safety and compliance record. Safety and compliance are integral to every decision we make. We take seriously our commitment to operate a safe and reliable pipeline system, and we strive for operational excellence and incident-free operations.

Kinder Morgan's track record in Arizona has been outstanding since we acquired these pipelines in March 1998. During this time, we have transported more than 440 million barrels of fuel into the state, and the recent product release in Tucson was the first time we have experienced an incident with one of our Arizona pipelines that was not a result of third party damage. We have had two releases due to third party damage and the July 30 release, which was due to high pH stress corrosion cracking (SCC). There were no injuries or fatalities as a result of any of these incidents.

Research conducted by Allegro Energy Partners and sponsored by the American Petroleum Institute and Association of Oil Pipe Lines (Exhibit 9) demonstrates that pipelines are the safest and most efficient form of transportation for refined products. Experience in Arizona reflects these national statistics. For example, for the five year period 1996–2000, there were 1104 highway hazardous material incidents, 102 rail hazardous material incidents, and 2 hazardous liquid pipeline related releases in Arizona. (Source: Bureau of Transportation Statistic; Arizona Transportation Profile; [http://www.bts.gov/publications/transportation\\_profile/arizona/](http://www.bts.gov/publications/transportation_profile/arizona/)). In the last year of this period 2000, there were two fatalities and four injuries from non-pipeline transportation modes. There has never been a death or injury to a member of the public as a result of a release from a pipeline owned or operated by Kinder Morgan's products pipeline group. Moreover, to our knowledge, there has never been a fatality or injury to the public as a result of pipeline operations in the state of Arizona since such accident records have been kept.

Our safety track record in Arizona is exemplary. Following the July 30 release we acted decisively in the interests of pipeline safety as demonstrated by our decision to temporarily shutdown service on the 8" Tucson to Phoenix pipeline after we became aware of the high pH SCC, a phenomenon never previously experienced on our refined products pipelines.

Our commitment to regulatory compliance is equally as strong. Kinder Morgan has a pipeline safety staff that actively participates in regulatory rulemaking, tracks all new regulations and ensures that our plans and procedures comply with pipeline safety regulations. We have a management of change process that ensures that changes are communicated to operations personnel. We have a separate internal auditing division that conducts audits of our field operations to ensure that we are complying with all applicable safety regulations.

We are routinely inspected by the U.S. DOT Office of Pipeline Safety (OPS) and State Pipeline Safety Agencies, such as the Arizona Corporation Commission (ACC) and the California State Fire Marshall's office. In Arizona, alone, we have been inspected four times by the ACC since 1998 (1998, 1999, 2001 and 2003; in 1999 the OPS participated in the Arizona Audit). The Southwest Region has also audited the pipeline section between New Mexico and Texas twice. In addition, we have been subject to audits of our Procedural Manuals, Integrity Management Plan and Operator Qualification Program by OPS. These audits have not uncovered any major compliance issues.

A specific example of our commitment to safety and compliance is one of the elements of our preventive maintenance program—our Integrity Management Program (IMP). Kinder Morgan Energy Partners (and its predecessor SFPP) have been inspecting pipelines with Magnetic Flux Leakage (MFL) in-line inspection tools ("smart pigs") since the early 1970s. Approximately 95 percent of Kinder Morgan's 3,325 miles of active pipelines in our Pacific operations have been internally inspected to date; almost 94 percent of these miles were internally inspected prior to the effective date of DOT's IMP rule (March 2001). As part of our ongoing preventive maintenance programs, we were internally inspecting pipelines in Arizona before such actions were ever required by the Federal or state government. In fact, all Kinder Morgan pipelines in Arizona had been smart pigged at least once before the effective date of the IMP rule and most had been smart pigged at least twice. The 8" Tucson-Phoenix pipeline was inspected in 1996 and 1999 and the 6" Phoenix to Tucson pipeline in 1999 and 2003.

Our overall philosophy is that internal inspection is very effective in detecting pipeline defects, such as external and internal metal loss, dents, and gouges, allowing us to repair potentially detrimental defects before they result in a release. By

combining information found during the in-line inspections, cathodic protection surveys and coating surveys, we can identify areas along the pipeline where recoating may be necessary and where more cathodic protection rectifiers might be needed. We are then able to focus our resources and take the appropriate remedial measures. We believe the existence of such a proactive program is why there has not been a leak due to generalized metal loss corrosion on these pipelines in Arizona in the last 15 years.

It is important to note that while internal inspection tools used by Kinder Morgan can detect wall loss due to generalized corrosion, these tools are not yet capable of identifying high-pH stress corrosion cracking in small diameter pipelines. The technology to detect SCC exists for larger diameter pipelines, but it has not yet been miniaturized to accommodate smart pigs in pipelines with diameters as small as 6" and 8".

Our current IMP has been updated to incorporate DOT's 2001 regulations. Our response, repair and mitigation strategies did not require any major revisions as a result of the 2001 DOT regulations; however, as most of the new regulatory requirements were already a part of our previous IMP program.

### **July 30 Incident**

On July 30, 2003, Kinder Morgan's 8" pipeline from Tucson to Phoenix failed during normal pipeline operations. The shutdown of the pipeline followed our emergency response procedures. The controller at our Orange, California control center initiated the line shut down within three minutes of receiving first indication of an abnormal condition from our SCADA system. We contacted the National Response Center, Arizona Corporation Commission, Arizona Department of Public Services, Arizona Department of Environmental Quality and The Tucson Fire Department. (In a post-response debriefing held with state and local agencies on October 2, Kinder Morgan received high marks for its response.)

Kinder Morgan and OPS originally believed the cause of the release was an ERW pipe seam failure. Based on the March 8, 1989, Pipeline Safety Alert Notice (ALN-89-01) and discussion with the Department of Transportation Office of Pipeline Safety Southwest Region (DOT), the pipeline was repaired and restarted on August 1, 2003, based on the following operating parameters:

- Operate the pipeline at 50 percent maximum operating pressure (MOP) for five (5) days
- Operate the pipeline at 60 percent MOP for one (1) day
- Operate the pipeline at 70 percent MOP for one (1) day
- Operate the Pipeline at 80 percent MOP until further notice.

As part of Kinder Morgan's on-going integrity program, the joint of pipe from the July 30, 2003, incident was sent to an independent lab for metallurgical analysis. On August 8, 2003, Kinder Morgan received the metallurgical report. The report concluded that the cause of the rupture was high pH SCC. Kinder Morgan had never experienced SCC before on one of its refined petroleum pipelines. Given this information and the pipeline's location near populated areas in the City of Tucson, Kinder Morgan determined that the only safe option was to shut down the pipeline (which was still operating at 50 percent MOP) and conduct further testing. When the line was shut down on August 8, we advised the DOT/OPS—Southwest Region, the ACC and the Arizona Department of Weights and Measures. Additionally, on August 9, we left messages for a contact person within the Arizona Department of Commerce.

Kinder Morgan immediately began developing hydrostatic test procedures for a pipeline that experienced an SCC failure. We used both internal engineering support and consultants with SCC and hydrostatic testing expertise to develop the plan. On August 13, 2003, this plan was submitted to OPS. We received initial approval of our plan from the DOT on August 14. We immediately began work to prepare the testing of approximately 12 miles of 8-inch line pipe. Testing would be done in two pipe segments—an 8-mile and 4-mile segment respectively. We received final approval of our test plan on August 19. The time between the initial and final DOT approvals was fully utilized to prepare this pipeline for hydrostatic testing. On August 20, the 8-mile segment was successfully tested. However, that same day the 4-mile segment failed the hydrostatic test. During the hydrostatic test, we experienced an SCC failure approximately 40 feet from the original release on July 30. Based on the second SCC failure, Kinder Morgan decided to bypass this section of pipe by temporarily using a portion of its Phoenix to Tucson 6" pipeline. This plan was the fastest way to return gasoline deliveries to normal levels in the Phoenix market.

After successfully putting the 8" Tucson to Phoenix line back in service through the 6" bypass on August 24, we continued our efforts to restore normal pipeline services. This was accomplished on September 12, by installing 4,600 feet of new 12-inch pipe through the area where the 8" pipe originally failed. Additionally, all of the 8-inch pipe through Tucson has been successfully hydrostatically tested. Our current plan is to replace all the 8-inch pipe through Tucson with new 12-inch pipe by February 2004.

#### **Responses to Market Disruption**

Immediately after we decided to temporarily take the 8" Tucson to Phoenix line out of service because of the SCC failure mode, we initiated steps to mitigate the impact of the shutdown. Throughout the weekend of August 9–10, modifications were made to our Tucson terminal. These modifications involved converting several tanks from conventional service to CBG service and connecting a truck rack lane to these tanks. These modifications allowed our shippers to transport by truck volumes of CBG gasoline from the East that otherwise would have moved over the closed 8" pipeline. Approximately 12,000 b/d were trucked to the Phoenix market as a result of these facility modifications while the 8" pipeline was out of service.

Kinder Morgan schedulers were also called to work the weekend of August 9–10 to contact our shippers and initiate the process of nominating additional volumes over the West Line to make up for volume shortfalls on the temporarily closed line between Tucson and Phoenix. During the week following the shutdown of the 8" pipeline, Kinder Morgan's West Line and barrels trucked from Phoenix, were meeting over 92 percent of the average daily demand (175,000 b/d) in the Phoenix market. (See Exhibit 3 which shows total products delivered by day to the Phoenix market in August.) For just over half the days in the month of August, deliveries to Phoenix exceeded the average daily demand in Phoenix.

Kinder Morgan's deliveries, however, do not tell the entire story. We do not know the inventory levels at the five other Phoenix terminals at the start of the month of August or for any day thereafter. That information is not in our possession and can only be obtained from the owners of those terminals. We do know, however, that nationally the trend is to maintain inventories at levels only necessary to meet anticipated demand and avoid the holding costs of excess inventory. When you combine the temporary shutdown of the 8" pipeline with current inventory management practices and the spike in demand triggered by panic buying and "topping-off" of tanks, there were resultant shortages of gasoline. Further complicating the supply/demand picture were logistical difficulties in accommodating increased trucking of products from Tucson terminals and outside of the state. (This problem in turn was exacerbated by weekly driving hour limits on truck drivers in Arizona. These restrictions were later relaxed.)

It should be reiterated, however, that the flexibility and responsiveness of Kinder Morgan's employees to the service disruption and the round-the-clock efforts to restore service on the 8" pipeline, allowed us to cover over 92 percent of the average daily demand in Phoenix. Two facts have special note: Kinder Morgan's West and East Lines delivered 8.4 million more gallons of total products into Phoenix in August of 2003 than it did in August of 2002. Looking solely at gasoline volumes in 2003 over 2002 for the month of August, Kinder Morgan actually transported 13 million more gallons of gasoline. Again, a reflection both of the flexibility of our pipeline operations in Arizona and the extraordinary demand conditions in the Phoenix market.

Kinder Morgan is not a marketer or retailer of gasoline. Consequently, the Committee should seek guidance from economists or experts from within those industry segments on the pricing consequences of the temporary supply/demand imbalance.

#### **Stress Corrosion Cracking**

The July 30, 2003, failure was not the result of generalized metal loss corrosion. Kinder Morgan has not had a metal loss corrosion release on an Arizona pipeline since 1988 and on the 8-inch pipeline since 1980. The July 30 failure was caused by high pH SCC, a phenomenon that is new to the refined products pipeline industry and involves cracking and not wall loss due to corrosion.

SCC must be distinguished from generalized petroleum corrosion. Generalized corrosion is the progressive conversion of steel to iron oxide (*i.e.*, rust). This metal loss can either be localized pitting or a more widespread uniform corrosion. The rate of general corrosion is independent of the pressure (*i.e.*, stress) in the pipe. Generalized corrosion can be controlled and eliminated through the application of cathodic protection currents.

In contrast, SCC is dependent on the pressure in the pipe. If the stress is too low, SCC will not occur. Similarly, the presence of cathodic protection does not control

the rate of SCC damage. SCC does not involve metal loss corrosion. SCC is a cracking phenomenon. The damage involves cracks that propagate at the microstructure level between and through the grains in the steel.

The high pH SCC identified with the July 30 failure is also different from near neutral pH SCC in several ways. Foremost is that high pH SCC does not occur in the presence of metal loss corrosion. In most cases of high pH SCC, very little to no surface corrosion can be observed. For high pH SCC to occur, a very specific set of conditions must coexist. For pipeline steels, a specific stress state in a specific environment must be present. Our research indicates that prior to our July 30, 2003, high pH SCC failure, there were no published failures related to high pH SCC in hazardous liquid pipelines. Our integrity and maintenance activities will now include plans and procedures for investigating both near neutral pH and high pH SCC.

A comprehensive stress corrosion cracking evaluation was conducted including 100 percent non-destructive examination by magnetic particle inspection of over 5,400 feet of pipeline removed from the immediate area of the release. Only two areas exhibited surface SCC indications. The first was in the pipe joint immediately downstream of the initial release. The other was a few thousand feet upstream. All of the initial investigation data from the removed pipe is currently being analyzed by the SCC contractor and we expect results in a few weeks. Identifying only two sites in almost 5,400 ft of pipe support the belief that the SCC issues are a localized phenomena related to specific environmental conditions. Based on the data gathered to date, we do not suspect SCC to be a widespread issue.

Kinder Morgan submitted its Stress Corrosion Cracking (SCC) Field Investigation Protocol to DOT on September 29, 2003. This document outlined an analytical method for identifying areas along the pipeline system with the potential for SCC. Plans for a field inspection program were presented in which direct knowledge from the 1-mile area encompassing the July 30, 2003, release site will be used to delineate the severity of SCC and establish the contributing characteristics to locate other areas along the pipeline system with the potential for SCC.

Kinder Morgan will use a predictive modeling process to enable the integration of physical characteristics and operating history of a pipeline segment with the results of inspection, examination and evaluation in order to determine the integrity of the pipeline regarding SCC.

The key steps in this process are as follows:

- Gather and integrate pipeline data such as pipe characteristics, construction practices, soils/environmental characteristics, corrosion protection, pipeline operations, and historical data. Specialized investigations include a series of cathodic protection surveys, soil characterization activities using specialized terrain classifications and extensive data integration, as well as the non-destructive examination of the 5,400 feet of removed pipe discussed above.
- Develop an algorithm to predict SCC likelihood in this system.
- Complete the case study on the removed pipe to delineate the severity of damage and provide a reference for refining the SCC predictability model.
- Predict terrain conditions conducive to SCC on this pipeline.
- Conduct the geotechnical survey of the entire Tucson to Phoenix system identifying locations containing SCC susceptible zones. Follow-up with supplemental close interval surveys and potential current mapping in these newly identified areas.
- Conduct field excavations using industry proven SCC investigation methods.
- Reintegrate the excavation findings and calculate the validity of the SCC prediction model. Prepare a report summarizing the findings.

The key to the success of this approach will be the collection, alignment, and integration of all necessary data into a database such that common characteristics can be accurately observed. Using the series of data techniques we propose in the immediate vicinity of the known release, together with the identification of other regions meeting similar criteria elsewhere along the Tucson—Phoenix pipeline, we believe we will be able to establish the safe operating parameters for this system. In the meantime, we are operating the Tucson to Phoenix 8" pipeline system at 50 percent maximum operating pressure and below 40 percent specified minimum yield strength (SMYS) of the pipe.

The plan we submitted to the DOT/OPS makes use of known experts in the field of pipeline SCC. Mr. Jim Marr of Marr Associates has been selected to conduct our SCC field investigation. Mr. Marr is the Chairman of the National Association of Corrosion Engineers (NACE) committee drafting the recommended practice on SCC.

The proposed plan exceeds the minimum requirements for field inspection and data integration identified in the ASME B31.8S standard. We are testing pipe operating at stress levels as low as 40 percent SMYS, whereas the Advisory and B31.8S suggest 60 percent SMYS. In addition, we are testing pipe operating with product whose temperatures are much below 100F°.

The protocol involves a complete surface environmental characterization in which we will identify the soil type, resistivity, pH, drainage potential, slope instability and other geotechnical features. We will follow this examination with a close interval survey in which we are measuring the effectiveness of cathodic protection system and the condition of the external coating system. In parallel, we will integrate all of our integrity management data into a specialized SCC predictive model that, together with our specific field results, will identify the combinations of stress, materials and environment that could contribute to SCC.

#### **Department of Transportation/Arizona Corporation Commission/Kinder Morgan's 6" Pipeline Phoenix to Tucson**

Testimony has been presented about regulatory actions surrounding generalized corrosion on the 6" Phoenix to Tucson pipeline and a Correction Action Order (CAO) issued by OPS. Kinder Morgan requested a hearing to contest some of DOT's initial requirements of the CAO. Nonetheless, Kinder Morgan took all appropriate steps to operate and maintain a safe pipeline, prior to the CAO, during the CAO review process, following the CAO hearing and after the issuance of the amended CAO.

This is evident by Kinder Morgan taking the initiative to have an Integrity Management Program in place prior to DOT's implementation of its Integrity Management Program. This program led to the November 1999 smart pig run. Kinder Morgan had completed repairs of all anomalies that required a pressure reduction by February 16, 2001, before DOT/OPS issued its initial CAO. Kinder Morgan followed all the DOT reporting requirements for a Safety Related Condition, and during the repairs, Kinder Morgan was in contact with both OPS-Southwest Region and ACC, keeping them abreast of progress. We implemented an active corrosion testing procedure. During the repairs of the 1999 pig run, Kinder Morgan performed specialized active corrosion tests and not a single test indicated that active corrosion was present on LS 53/54. Kinder Morgan also contracted two third-party consultants to review Kinder Morgan findings based on the gathered data from anomaly repairs and active corrosion tests. Dr. John Kiefner of Kiefner and Associates Inc. and Mr. Kevin Garrity of CC Technologies Inc. reviewed Kinder Morgan data and provided testimony at Kinder Morgan's CAO hearing. Mr. Garrity testified that he believed that the corrosion on LS-53/54 occurred within the first two years after its initial construction and before its then owner applied cathodic protection to the system. Dr. Kiefner validated the accuracy of the ILI tool such that the anomalies identified by the tool were within 95 percent accuracy of those identified in the field. Further, even before receiving the amended CAO dated March 17, 2003, Kinder Morgan ran another smart pig through this line. Kinder Morgan had already done so by March 1 2003. Throughout the adjudication process at DOT/OPS, Kinder Morgan continued to conduct cathodic protection tests and its weekly rectifier aerial surveys and quarterly physical inspections.

In November 1999 Kinder Morgan conducted an in-line inspection of the 6" pipeline between Phoenix and Tucson, Line Section 53/54 as part of its preventive maintenance and integrity management program. This in-line inspection predates the Federal pipeline safety regulation's integrity management requirements. This was the first time that an in-line inspection was conducted on LS 53/54, however; it was not the first time in-line inspections had been conducted on pipelines in Arizona. The preliminary report received from the in-line inspection vendor was received by Kinder Morgan on February 28, 2000, and indicated several anomalous conditions that had the potential to affect the safe operation of the pipeline. Kinder Morgan engineers reviewed and analyzed the report data and the safe working pressure of the pipeline was calculated based on the indicated anomalies. When these calculations were completed the next day, February 29, 2000, the pressure was immediately reduced. (See Exhibit 8 for chronological sequence of events of LS 53/54.)

We took appropriate action in the interest of public safety. Maintenance crews were dispatched to begin excavating and investigating the anomalies. On March 2, 2000, maintenance crews discovered a segment of pipeline that had three corroded areas close to each other and as such was classified as generalized corrosion. The pipeline was repaired and on March 8, a Safety Related Condition report was submitted via fax to the OPS and the ACC. A duplicate was filed with the ACC because Kinder Morgan was unaware that the ACC was no longer an interstate agent of the Office of Pipeline Safety. (LS 53/54 are part of the interstate pipeline that transports refined products from California to Phoenix and Tucson.) Kinder Morgan

would later learn that OPS had not renewed the interstate agent agreement with ACC. ACC responded to the Safety Related Condition and began a special investigation of the event.

On March 28, 2000, another area of generalized metal loss corrosion was found and Kinder Morgan's maintenance manager on-site requested that the pipeline be shut down while the pipe was inspected and repaired as a precautionary safety measure. This was done. Meanwhile, ACC notified Kinder Morgan that they considered LS 53/54 "intrastate" and based on its state authority dictated that the pipeline could not be restarted without its approval. Although Kinder Morgan did not accept ACC's position regarding the intrastate classification of the pipeline, we received concurrence from ACC to restart the pipeline at a reduced pressure of 52 percent of the MOP. The ACC would later attempt to cite Kinder Morgan for violations of the Arizona pipeline safety regulations and, under its state authority, conduct a routine safety evaluation of this pipeline. The ACC subsequently dropped both of these endeavors. Subsequently OPS wrote an opinion letter clearly identifying these pipelines as interstate.

During this time, Kinder Morgan understood that OPS granted the ACC temporary interstate agency status and requested that it investigate the Safety Related Condition. OPS personnel also participated in the investigation. We cooperated completely with this investigation and complied with every request made by the ACC or the OPS.

By September 15, 2000, Kinder Morgan had addressed all anomalies that required a reduction in operating pressure and which were discovered during its November 1999 in-line inspection of LS 53/54. The only outstanding anomaly after this date was one that was located under a concrete embankment under Interstate 10 and adjacent to a railroad right of way. This anomaly did not require a reduction in operating pressure, but because of its location, Kinder Morgan decided to replace it with new pipe. The delay in making this repair was due to delays in obtaining permits from the Arizona Department of Transportation. The replacement of this pipe was completed on February 16, 2001.

On March 14, 2001, OPS issued a Corrective Action Order (CAO) requiring Kinder Morgan to:

1. Maintain the pressure on the line that is less than or equal to 80 percent of the MOP (Maximum Operating Pressure).
2. Get OPS approval before increasing the operating pressure on the line above 80 percent.
3. Develop and implement a work plan and schedule for performing coating evaluation on line LS 53/54.
4. Develop and implement a work plan and schedule for re-coating, repairing or replacing sections of LS 53/54 that are determined by the coating evaluation to require remedial measures.
5. Develop a work plan and schedule for conducting internal inspection tests using the same or similar technology which identified the extensive metal loss referred to in the preliminary finding.
6. Submit a report to OPS on all internal inspections that had been conducted on pipeline systems within the states of Arizona, New Mexico, and Texas since January 1997.

The basis for these corrective actions were the preliminary findings of OPS and the conclusions it drew relative to the role the pipeline coating played in the corrosion indicated on the in-line inspection report. Kinder Morgan disagreed with the technical basis of the preliminary finding, the proposed corrective action and thus requested a hearing. A hearing was granted and held on August 14, 2001.

Our disagreement primarily focused on two issues; first, the corrosion discovered by the in-line inspection and second, the effect of the coating on the adequacy of the cathodic protection. As stated earlier, this was the first in-line inspection conducted on this pipeline. This pipeline was constructed in 1956 without cathodic protection. It was approximately two years later before cathodic protection was applied. Based on cathodic protection surveys, more anode ground beds and rectifiers—the current source for cathodic protection, were installed along the pipeline. This is important because, although the in-line inspection indicated a number of locations of corrosion, there was no way to identify from the report when the corrosion took place. In an effort to determine if the corrosion was active or on-going corrosion, electrical and chemical test were conducted at each location excavated. These tests demonstrated that the line was receiving adequate cathodic protection and that there was no active corrosion taking place at the anomaly locations. These tests demonstrated that the corrosion that was indicated on the in-line inspection report

was probably corrosion that occurred in the years prior to cathodic protection being installed.

OPS's preliminary findings addressed coating, current density requirements and rectifier spacing. It concluded that coating degradation was a "major contributing factor in the development of corrosion and external metal loss". As demonstrated by the electrical/chemical tests, however, there was no evidence of active on-going corrosion on this line. The annual monitoring of the cathodic protection system indicated that the pipeline was adequately cathodically protected. While the condition of the coating increases the current requirements and impacts rectifier spacing, tests demonstrated that the cathodic protection was effective. More pertinent to the adequacy of the cathodic protection is the fact that a corrosion leak has not occurred on this pipeline since 1988.

Kinder Morgan retained the services of Kevin C. Garrity, PE of CC Technologies Service Inc and Dr. John Keifner of Keifner and Associates Inc., two leading experts in their respective fields, to assist us in the review and analysis of the tests.

Specifically, Kinder Morgan retained CC Technologies Services, Inc. (CC Technologies) to conduct an integrity and corrosion control review of LS 53/54 and provide a critical assessment of the practices and procedures that Kinder Morgan has employed to establish the integrity of this section of 6" diameter pipeline. Specific emphasis was placed on the analysis of in-line inspection anomaly data; analysis of corrosion digs inspection data; and analysis of cathodic protection practices.

CC Technologies analysis concluded that we could continue to safely manage the integrity of the LS53/54 piping through the existing procedures included in the Kinder Morgan integrity plan and that we should not proceed with costly and ill advised procedures to satisfy a corrective action order that failed to acknowledge the preponderance of evidence demonstrating that LS53/54 have been safely managed against corrosion integrity threats.

Dr. John Keifner was retained to review the analysis of the anomaly data, perform a probability analysis of the pipeline corrosion data and a review of the proposed plan of remedial action. Dr. Keifner concluded that the metal loss anomalies that were tested did not appear to be actively corroding and did not appear to be associated with MIC. Further, his analysis indicated that effective cathodic protection was being achieved and that the majority of the metal loss on this pipeline occurred during the first few years after construction prior to the establishment of effective cathodic protection. He further concluded that the review of the analysis of anomaly data indicated that the anomalies that met the conservative dig criteria chosen by Kinder Morgan were repaired or replaced, the remedial actions taken to address the anomalies that were detected were conservative and adequate to reduce the potential for a pipeline failure due to a detected metal loss or deformation anomaly and that future in-line inspections should be scheduled in accordance with the Kinder Morgan IMP.

The above information was presented at the DOT hearing on August 14, 2001. On March 17, 2003, Kinder Morgan received an amended CAO that indicates that the Hearing Examiner agreed with our position relative to the need for coating evaluation. The amended order removed the requirements for performing the coating evaluation; the requirement to re-coat, repair or replace coating based on the coating evaluation and the requirement to submit a report to OPS on all internal inspections that had been conducted on pipeline systems within the states of Arizona, New Mexico, and Texas since January 1997.

The only requirements in the amended CAO were to limit the operating pressure to 80 percent of MOP, develop a work plan and schedule for conducting an internal inspection test using the same or similar technology used previously; and submit the findings of the in-line inspection to OPS.

By the time Kinder Morgan received the amended order on March 17, 2003, we had already completed the subsequent run of the in-line inspection and were waiting on the inspection report. We received the report in May 2003 and began to take the appropriate remedial measures. We furnished a report of the findings to OPS. In fact, during the 2003 ACC audit of the Arizona pipelines, ACC visited one of the repair sites.

The 2003 in-line inspection report indicated that:

- There were no "Immediate" repairs as defined by DOT's IMP regulation.
- There were two "60-day" repair conditions. The first was a 3.5 percent dent at 1:10 o'clock position. The second was a 4.7 percent dent at 11:51 o'clock position. Repairs were made.
- There were no "180-day" repair conditions reported in the Final report.

We believe that we have fully complied with the amended CAO and are operating this pipeline and our other pipelines in Arizona in a safe and reliable manner.

### Conclusion

Pipelines are the safest and most efficient means of delivering petroleum products from refiners to end-users. The experience of Kinder Morgan and the companies which preceded it in Arizona is no exception. In the 48-year history of products pipelines serving Arizona, there have been no deaths or injuries to the public. In the five years and six months during which Kinder Morgan has owned and operated these pipelines, we have transported over 440 million barrels of petroleum product to Arizonans. During that period there have been 3 releases from our pipelines. Two were due to damage caused by third parties striking the pipeline and the third was the high-pH SCC-incident on July 30.

The volumes released from the July 30 incident represented 1/10,000th of 1 percent of the volumes Kinder Morgan has transported over these lines since acquiring them in March 1998. Nonetheless, one barrel out of our pipelines is one barrel too many. The simple fact is that Federal or state regulations do not animate our interest in safety. Protection of our employees, the public upon whose lands we operate and the environment creates the drive for operational excellence and incident-free operations. Moreover, our financial interests are best served by operating safely. Service disruptions cost us business, for we only make money if we can move products from origin to destination. Releases also bring with them a host of unacceptable consequences from cleanup costs and environmental remediation expenditures to litigation, which, more frequently these days, can have both civil and criminal components. Injuries or death arising from an incident can undermine a company's reputation and its franchise to do business or grow its business in those states in which it operates. These are all compelling reasons for operating our pipelines safely.

The decision to temporarily shut down the 8" pipeline on August 8 was the safe and prudent course of action. A fundamental principle that we constantly emphasize to our operations personnel is: "If in doubt, shut the pipeline down and restart the line only after the doubts have been eliminated." High pH SCC has never been experienced on a Kinder Morgan refined products pipeline and we believed the line had to be hydrostatically tested to ensure it could be operated safely. Although the resultant service disruption inconvenienced consumers, far greater would have been the criticisms and consequences of continuing to operate the line and having another release. Moreover, our flexibility and responsiveness were key to providing petroleum products to Phoenix during the service disruption, a task complicated by the surge in demand as "panic buying" set in.

Testimony has been entered about generalized corrosion issues on the 6" pipeline between Phoenix and Tucson. The OPS/ACC relationship and the length of time OPS took to issue its amended corrective action order cannot obscure several fundamental facts: First, the internal inspection Kinder Morgan ran on the 6" pipeline was part of a voluntary program began in the early 1970s by SFPP and carried on by Kinder Morgan to assess the integrity of its pipelines. This program predated the mandatory OPS management plan program by approximately 30 years. Operating pressures on the 6" line were reduced first to a level acceptable to OPS and again to a lower level requested by the ACC despite the lack of authority for ACC to order the reduction. Kinder Morgan contested the OPS order because it disagreed with the assessment that the pipeline was not adequately protected from generalized corrosion. Nationally renowned experts, who provide their expertise to government and industry alike, demonstrated the pipeline was adequately protected from generalized corrosion. Moreover, the March 17, 2003, amended corrective action order implicitly recognizes the effectiveness of the cathodic protection on the 6" pipeline when it removed the requirement to recoat the pipeline. Additionally, the primary action which OPS requested be taken in its amended corrective action order (*e.g.*, another internal inspection of the 6" line), was completed by Kinder Morgan prior to the order being issued. Here too, it was undertaken because it was the prudent and sensible course of action.

Although Kinder Morgan believes it understands the respective roles and responsibilities of OPS and the ACC in regulating our interstate pipeline facilities, the company has been caught between the competing positions of certain staff members at ACC and the OPS. OPS clearly has primacy with respect to interstate pipelines and ensuring that a common nationwide framework of safety regulations exists. We encourage ACC's involvement with public education, siting and notice requirements involving utilities as well as promoting the excellent "blue stake" damage prevention program in Arizona. All parties have a role to play in ensuring public safety.



Kinder Morgan has built an excellent safety record in the state of Arizona. We look forward to providing the citizens of Arizona with safe and efficient pipeline operations for many years to come.

EXHIBIT 1—PACIFIC REGION SYSTEM MAP

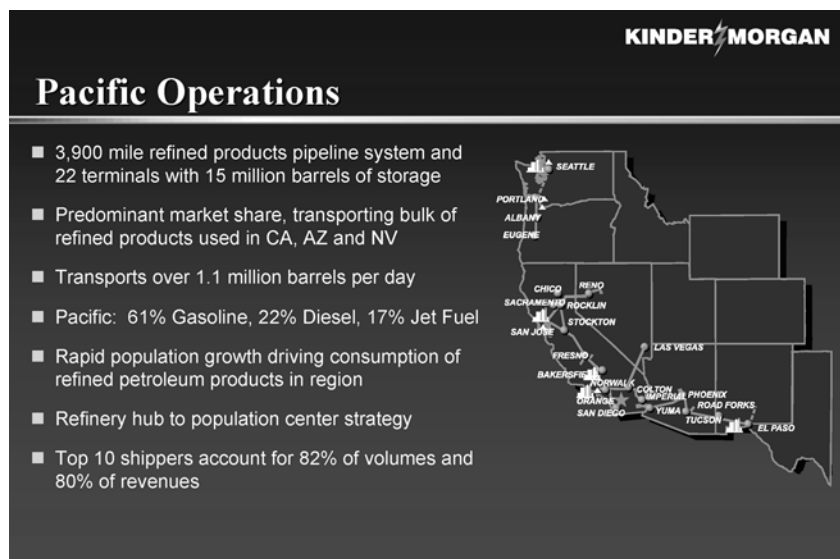


EXHIBIT 2—PHOENIX GASOLINE DISTRIBUTION (EAST/WEST LINE)

2003 January–July Phoenix Total Gasoline Volumes		
East Line	11,020,535	47.3%
West Line	12,279,044	52.7%
Total	23,299,579	100.0%
2003 January–July Phoenix Conventional Gasoline Volumes		
East Line	2,154,359	60.8%
West Line	1,387,466	39.2%
Total	3,541,825	100.0%
2003 January–July Phoenix CBG/AZBOB Gasoline Volumes		
East Line	8,866,176	44.9%
West Line	10,891,578	55.1%
Total	19,757,754	100.0%

EXHIBIT 3—PHOENIX BARRELS DELIVERED IN AUGUST

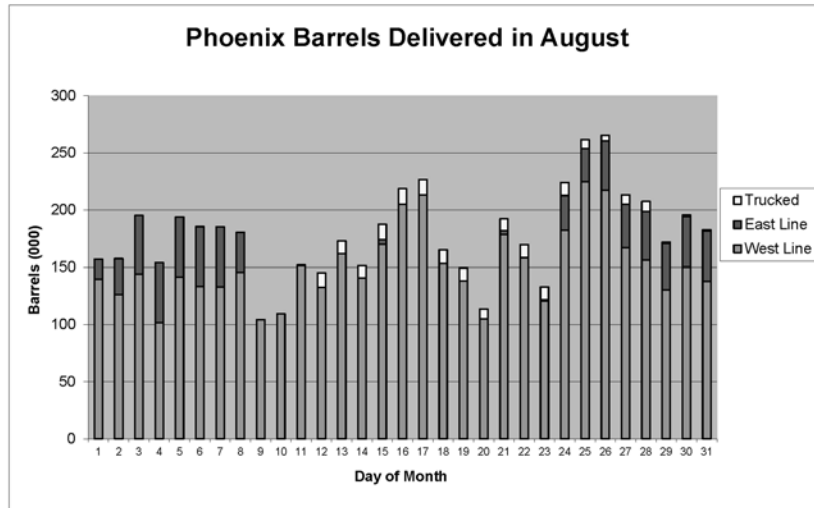
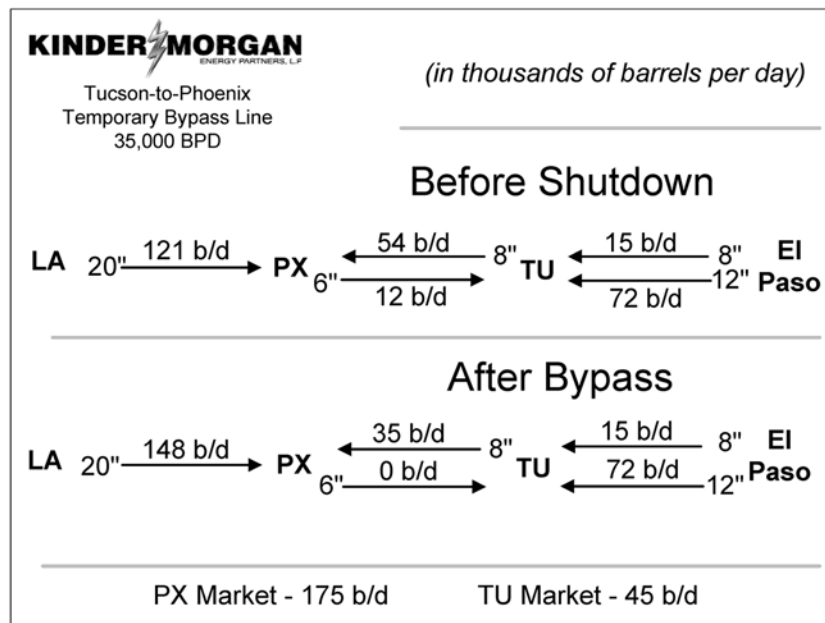


EXHIBIT 4—TUCSON TO PHOENIX TEMPORARY BYPASS LINE



## EXHIBIT 5—EAST LINE EXPANSION/MAXIMUM EAST LINE CAPACITIES

**East Line Expansion**

SFPP is considering installing approximately 160 miles of 16" pipe between El Paso and Tucson and replacing the remaining 84 miles of 8" pipe between Tucson and Phoenix with 12" pipe. Sixty miles of 16" pipe would be installed downstream of El Paso and 100 miles downstream of Deming. This would result in one 16"/12" line at El Paso and one 12"/8" line between El Paso and Tucson and pump stations—with new pumps—at El Paso and Deming on both lines. New pumps would also be required at Tucson but initially it would not be necessary to run Toltec.

Phase I would increase the current East Line capacity by about 56 percent (from 94,000 BPD to 147,000 BPD). If the 16" line were eventually completed all the way from El Paso to Phoenix (Phase II), the capacity of the 12" line to Tucson would be 77,000 BPD and the capacity in the 16" line feeding the 12" TU-PX line would be 120,600 BPD. With Toltec Booster (Phase III) this capacity would increase to 155,600 BPD.

This proposal would include a break-out facility west of El Paso to gather product from various shippers and pump to Tucson and Phoenix. Several operational and design issues have to be resolved to finalize the cost estimate and evaluate the feasibility of the break-out facility. Because of the level of detail required to prepare an accurate scope of work, these issues will not be finalized in time to include in the feasibility study. Estimated budget for the break-out facility is \$30,000,000.

A cost estimate for this proposal (Phase I only) is \$180MM.

**MAXIMUM EAST LINE CAPACITIES**

	TOTAL BPD	TUCSON BPD	PHOENIX BPD	PERCENTAGE INCREASE TUCSON	PHOENIX
CURRENT 12" + 8" LINE	94,000	40,000	54,000		
<b><u>PHASE I - INSTALL 160 MILES OF 16" PIPE EP-TU, INSTALL 84 MILES OF 12" PIPE TU-PX</u></b>					
PROPOSED 12"/8" LINE EP-TU	37,100	37,100	0	20%	
PROPOSED 16"/12" LINE EP-TU, 12" LINE TU-PX	<u>109,900</u>	<u>10,900</u>	<u>99,000</u>		83%
SUB TOTAL	147,000	48,000	99,000		
<b><u>PHASE II - INSTALL REMAINING 164 MILES OF 16" PIPE EP-TU</u></b>					
12" LINE EP-TU	77,000	77,000	0	93%	
16" LINE EP-TU, 12" LINE TU-PX WITHOUT TOLTEC	<u>120,600</u>	<u>0</u>	<u>120,600</u>		123%
SUB TOTAL	197,600	77,000	120,600		
<b><u>PHASE III - UPGRADE TOLTEC BOOSTER</u></b>					
12" LINE EP-TU	77,000	77,000	0	93%	
16" LINE EP-TU, 12" LINE TU-PX WITH TOLTEC	<u>155,600</u>	<u>0</u>	<u>155,600</u>		188%
SUB TOTAL	232,600	77,000	155,600		

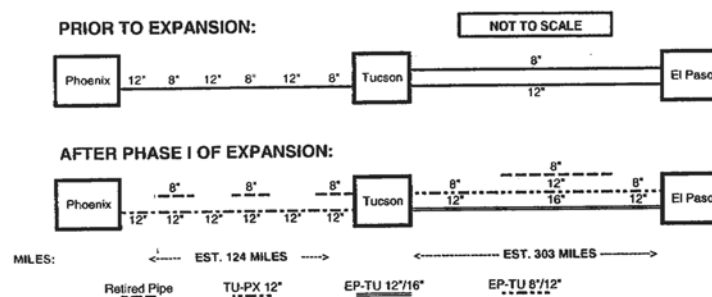
## East Line Expansion Analysis

**Scope of Project:** Estimated \$180MM Investment

Install 160 miles of 16" pipe between El Paso and Tucson on the current 12" line

Replace 84 miles of 8" with 12" between Tucson and Phoenix (would now be all 12" TU-PX)

<b>Capacity increase:</b>	EP-TU 8"/12"	Current 16 MBPD to 37 MBPD	Incremental:
	EP-TU 12"/16"	Current 78 MBPD to 110 MBPD	EP-TU 53MBPD
	TU-PX 12"	Current 55 MBPD to 99 MBPD	TU-PX 44 MBPD



## Tucson to Phoenix 8" Timeline

July 30, 2003—Initial Release

August 1, 2003—Pipeline Repaired and Line Restarted

August 6, 2003—DOT Corrective Action Order Issued on Initial Release

August 8, 2003—Received Metallurgical Report and Shutdown Pipeline—DOT/ACC Notified

August 9, 2003—Additional Discussions with DOT/ACC re Line Shutdown

August 9, 2003—Initiated discussions with Shippers on nominating additional Phoenix grade gasoline from the LA Refineries

August 11, 2003—First discussions with Governor's Office regarding Line Shutdown

August 12, 2003—Completed Tucson Terminal tank and loading rack modifications for loading of Phoenix grade gasoline

August 13, 2003—Submission of Hydrostatic Test/SCC Investigation Plan

August 14, 2003—Received Initial Approval from DOT on Hydrostatic Test/SCC Investigation Plan

August 15–19, 2003—Prepare line for hydrostatic test in advance of DOT Final Approval

August 19, 2003—Received Final Approval from DOT on Hydrostatics Test Plan

August 20, 2003—Section 1 Hydrotest Complete

August 20, 2003—Section 2 Hydrotest Unsuccessful

August 24, 2003—Start-up of Tucson to Phoenix Pipeline with Bypass

September 12, 2003—Completed installation of 4,600 feet of new 12" pipeline. Tucson to Phoenix line operating normally at 50 percent maximum operating condition. Phoenix to Tucson 6" pipeline operating normally.

## EXHIBIT 7

**LS 53/54 Phoenix to Tucson 6"**  
**1999 Internal Inspection and Repairs**

- *November 24, 1999*—Ran a high resolution smart pig through LS 53/54. This was the first in line inspection for LS 53/54.
- *February 28, 2000*—Received “Preliminary Report” listing anomalies having an indicated maximum pit depth greater than or equal to 50 percent of wall thickness.
- *February 29, 2000*—After analysis on the preliminary report, operating pressure was lowered to 1735 psi from 2000 psi.
- *March 2, 2000*—Anomaly at MP 71.52 was excavated and evaluated. No additional pressure reduction was required at this time.
- *March 3, 2000*—Installed three full encirclement split steel reinforcement sleeves over areas of general corrosion.
- *March 28, 2000*—LS 53/54 was shutdown to replace 120-feet of pipe at MP 47.06 in which generalized corrosion was identified.
- *April 3, 2000*—Further reduced operating pressure to 1050 psig, 52.5 percent of MOP in order to restart pipeline.
- *September 15, 2000*—All pressure affecting anomalies found by the November 1999 In Line Inspection of LS 53/54 are repaired.
- *February 16, 2001*—The last outstanding anomaly (not pressure affecting) was replaced with new pipe. The delay in making this repair was due to delays in obtaining permits from the Arizona Department of Transportation.

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EXHIBIT 8—LS 53/54 CAO, HISTORY & TIMELINE FROM 1999–MAY 29, 2003

- 1) On *November 24, 1999*, as part of KM’s Integrity Management Program, KM ran a high-resolution smart pig through LS–53/54. This was the first In Line Inspection (ILI) for *LS–53/54*.
- 2) On *February 28, 2000*, KM’s ILI vendor submitted a “Preliminary Report” to KM.
- 3) After doing an analysis on the preliminary report for Safe Operating Pressure, it was determined that the pressure should be lowered to *1735 psi* from its original operating pressure of *2000 psi*. The pressure was lowered on *February 29, 2000*.
- 4) On *March 2, 2000*, an anomaly at *MP 71.52* was excavated and evaluated. No additional pressure reduction were required.
- 5) On *March 8, 2000*, KM submitted a Safety Related Condition (SRC) report to DOT per the requirements of 49 CFR 195.56. A copy of this report was also faxed to the ACC. The SRC was submitted because KM classified one of the anomaly areas as general corrosion. This classification along with the pressure reduction met the definition of a SRC under 49 CFR 195.55(a)(1) which states: “General corrosion that has reduced the wall thickness to less than that required for the maximum operating pressure”. It was determined “general” because 3 different in areas in close proximity were affected.
  - a) KM indicated on their SRC that the discovery date was *March 2, 2000*, and the repair completion date was *March 3, 2000*. KM installed 3 full encirclement split steel reinforcement Sleeves (26”, 21” and 12”) over areas of general corrosion.
- 6) On *March 28, 2000*, KM shutdown *LS–53/54* at the request of the Maintenance Manager in order to safely replace 120-feet of pipe at *MP 47.06* in which generalized corrosion was identified.
- 7) By letter dated *March 29, 2000*, ACC informed KM that *LS–53/54* was an *intrastate* pipeline and that KM could not restart the line without first obtaining ACC’s approval.

- 8) On *March 31, 2000*, KM responded to ACC's Letter dated *March 29, 2000* informing the ACC of KM's belief that all their pipeline operations within the state of Arizona are interstate as none of the commodity is transported through these lines originates in Arizona. KM also stated "... in an effort to work cooperatively with Arizona, we have agreed to take certain steps to ensure the safety of the line in exchange for Arizona's concurrence that we may restart and continue to operate the line. In addition, ACC was informed that the line pressure on *LS-53/54* would be maintained at *1500 psi*, which would produce an additional safety factor above the original *1735 psi*.
- 9) On *April 3, 2000*, KM further reduced its operating pressure to *1050 psig* (52.5 percent of MOP).
- 10) On *April 7, 2000*, Kinder Morgan (KM) submitted a letter to DOT requesting their assistance in clarifying with ACC the interstate/intrastate delineation for *LS-53/54*.
- 11) By letter dated *April 11, 2000*, ACC informed KM that they would be inspecting KM facilities on *May 15, 2000*. ACC wanted to conduct this audit under their intrastate authority.
- 12) By letter dated *May 4, 2000*, the ACC informed KM that during a "Specialized audit of a Safety Related Condition on the six inch (6") hazardous liquid pipeline from Phoenix to Tucson" the ACC noted seven (7) probable non-compliances during the audit.
  - a) 195.214(b) Each welding procedure must be recorded in detail including the results of the qualified tests. *Finding*: ACC indicated that "The specifics for rods or rod size to be used to make the weld are not correct. Procedures use two (2) different schedules". Their note was that this probable noncompliance is common throughout the welding procedures submitted.
  - b) 195.222: Each welder must be qualified in accordance with section 3 of API Standard 1104. *Finding*: ACC indicated that "The welder using KM welding procedures are not qualified. All welders must be re-qualified because the welding procedures are not qualified. All welders must be qualified after procedures have been qualified. All new welders must be qualified under the 18th edition of API 1104.
  - c) 195.244: Test leads used for corrosion control or electrolysis testing must be installed at intervals frequent enough to obtain measurements indicating adequacy of cathodic protection. *Findings*: The potentials measured on the pipeline exposed on *March 29, 2000* do not meet the requirements of the -850 mV criteria. The current applied potential was -1.184 volts and -0.750 volts (current off). Potential measured at MP 60.63 were -.634 volt current applied and -.608 volt current off. KM failed to confirm the adequacy of CP.
  - d) 195.402: A manual of written procedures shall be developed for conducting normal operations and maintenance. *Findings*: The KM procedure titled: Administrative Policy for CP Rectifier Quarterly Maintenance located in the KM Corrosion Manual fails to instruct employees to inspect rectifiers six times each calendar year not to exceed two and one half months. The current KM procedure requires that the rectifiers be inspected at least four times a year at intervals not to exceed four months (see exhibit No. 2).
  - e) 195.416(c): Each rectifier must be inspected at least six times each calendar year at intervals not to exceed two and one half months. *Findings*: Records indicate that rectifiers were not inspected six times a year at intervals not exceeding two and one half months.
  - f) Arizona Administrative Code R-14-5-202(J): Cathodic protection systems must meet -850 mV criteria. *Findings*: KM is currently utilizing an alternative criteria and must apply for a waiver to continue to use any criteria other than the -850 mV criteria.
  - g) Arizona Administrative Code R-14-5-202(Q): All welding procedures and welder qualifications will be in accordance with API 1104. *Findings*: KM is using API 1107 when making repairs to the pipeline. State code does not allow any other standard than API 1104 without a waiver authorizing the use.
- 13) By letter dated *May 19, 2000*, ACC informed Mr. Jay Shapiro of Fennemore Craig, Phoenix, AZ, outside legal counsel for KM, that the intrastate code compliance audit scheduled for *June 15, 2000* was indefinitely postponed. In

addition, the request for response to the non-compliance items listed in their May 4, 2000 letter was rescinded. However, KM is put on notice that these non-compliances have been identified.

- 14) KM received a carbon copy letter, dated *June 1, 2000*, of an inspection report from the ACC addressed to Mr. Rod Seeley with the U.S. Department of Transportation, Houston, TX. Within this letter, ACC indicated that KM violated the following regulations: (NOTE: the following violation are the same as cited in the May 4, 2000 letter excluding the Arizona Administrative Code violations)
  - a) 195.222 Welder Qualifications: ACC indicated that welder were qualified to a procedure that was not qualified. ACC position is that procedures need to be qualified in accordance with API 1104. 49 CFR 195.214 Welding General does not require welding procedures to be qualified in accordance with API 1104. This section just requires that the procedures must be qualified. ACC intrastate regulation do stipulate that welding procedures need to be qualified in accordance with API 1104 but since KM in an interstate operator, this restriction does not apply. KM believes that all its welding procedure, which were previously qualified under the supervision of an ACC inspector, continue to meet the Federal requirements.
  - b) 195.244 Test Leads: ACC indicated that corrosion control test leads must be installed at intervals frequent enough to obtain electrical measurements indicating the adequacy of the cathodic protection. KM could not achieve adequate cathodic protection between test stations. ACC related the low potentials list below as the cause of "The thousands of anomalies identified by the pipeline inspection tool clearly indicate a lack of cathodic protection test stations used to determine the adequacy of cathodic protection on the pipeline. ACC indicated that on March 29, 2000, the pipe to soil potentials at
    - i) MP 71.52 were -1.184 volts, current applied and -0.740 volts current off.
    - ii) MP 60.63 were -0.634 volts current applied and -0.608 volts current off.
  - c) 195.402 Procedural Manual for Operations, Maintenance and Emergencies: ACC indicated KM rectifier inspection procedure fails to instruct employees to inspect rectifiers six times each calendar year not to exceed two and one half months. KM procedure requires that the rectifiers be inspected at least four times a year not to exceed four months. The ACC did not take into account KM's practice of evaluating rectifiers on a weekly bases based on utilizing aerial patrols that observe aerial indicators that KM has installed on its rectifiers. These aerial indicators monitor the output of the rectifier. When the output of the rectifier drops a certain predetermined percentage, the aerial indicator stops operating. This in turn is observed by our aerial pilots which fly KM pipelines on a weekly bases. These pilots then inform ground personnel to go and inspect the rectifier in question. KM believes that this practice far exceeds the minimum requirement of six inspection. Under the Federal requirement, a rectifier can stop operating the day after one of our inspection and would not be aware of this situation until the next inspection two and one half months later. Under KM's current practice, the longest time period a rectifier can go with out operator is approximately one week. The four inspections that ACC referenced are KM physical inspections of the rectifier and the calibration inspections of the aerial indicators.
  - d) 195.416(c) External Corrosion Control: ACC indicated that KM records indicated that rectifiers were not inspected six times. Based on item c) above, this is correct since our physical inspections are conducted quarterly and our aerial inspections are conducted weekly. We believe this practice goes above and beyond the six inspection requirement of the Federal regulation.
- 15) By letter dated, *June 9, 2000*, OPS responded to KM request for interpretation of jurisdictional delineation. OPS concurred with KM position that LS-53 should be considered interstate. The following people were sent a carbon copy of this letter:
  - a) ACC Robert J. Metli and Terry Fonterhouse and
  - b) OPS-SW, Rod Seeley.

- 16) By *September 15, 2000*, KM had addressed all anomalies requiring pressure reduction found by its *November 1999* In Line Inspection of *LS-53/54*. The only outstanding anomaly after this date was one that was located under a concrete embankment under Interstate 10 and adjacent to a railroad right of way. This anomaly was not pressure related but because of its location, KM decided to replace it with new pipe. The delay in making this repair was due to delays in obtaining permits from the Arizona Department of Transportation. The replacement of this pipe was completed on *February 16, 2001*.
- 17) By letter dated *March 14, 2001*, OPS issued KM a *Corrective Action Order, CPF 4-2000-5010-H*.
  - a) The Order placed a 80 percent of MOP pressure restriction on two line segments (LS-53 & LS-54) of Phoenix-Tucson pipeline, and
  - b) The Order proposed additional corrective measures with respect to the Phoenix to Tucson line, and required additional information about the condition of KM's entire pipeline system in Arizona, New Mexico, and Texas. On LS-53 and LS 54, KM was required to:
    - i) Develop and implement a work plan and schedule for performing coating evaluations on the line using Coating Mapper or Direct Current Voltage Gradient. The plan was to be submitted to OPS within 15 days of receipt of the amended CAO. KM was also required to submit a report of the data collected and findings made as a result of the work plan within 15 days of the completion date established by the approved work plan.
    - ii) Develop and implement a work plan and schedule for re-coating, repairing or replacing sections of the line that are determined by the coating evaluation to require remedial measures. The work plan and schedule was to be submitted to OPS within 15 days of submission of the report required by (b)(i) above. KM was to submit a progress report of all remedial actions taken 120 days after approval of the work plan and then every 120 days thereafter until the work plan was completed. KM was to submit a final report on all remedial actions taken under the plan within 30 days of completion of the final action required by the work plan.
    - iii) Develop a work plan and schedule for conducting internal inspection tests of the line using the same or similar technology used in the 1999 internal inspection. KM was to submit the work plan to the OPS within 30 days of receipt of the amended CAO. KM was to implement the work plan upon completion of the final action described in item (b)(ii) above, and submit a report on the results of the internal inspection tests within 30 days of completion of the testing.
  - c) With respect to lines in Arizona, New Mexico, and Texas, KM was required to submit a report to the OPS on all internal inspection tests that had been performed on lines in Arizona, New Mexico, and Texas since January 1, 1997 within 60 days of receipt of the amended CAO. The report was to include the final results of all internal inspection tests, the repair criteria established for each internal inspection test conducted, and all other information relevant to repairs made including a complete description of the repair criteria and repair methods.
- 18) By letter dated *March 28, 2001*, KM clarified the receipt date of the Corrective Action Order CPF 4-2000-5010-H as being *March 26, 2001*. There were some mail routing problems in getting the CAO to Bill White. DOT's original letter went to Orange, CA when Bill White was in Houston. KM wanted to clarify this because of response time constraints that were stated in the CAO.
- 19) By letter dated *April 3, 2001*, KM requested a hearing with DOT to discuss CAO for *LS-53/54*.
- 20) By letter dated *April 26, 2001*, OPS informed KM that CPF 4-2000-5010-H was renumbered to CPF 4-2001-5010-H.
- 21) By letter dated *August 9, 2001*, KM provided OPS an advance copy of our written response to the CAO.
- 22) On *August 14, 2001*, the CAO hearing was held in the OPS-SW Region Office in Houston, Texas. By revised letter dated *August 14, 2001* and hand carried to the hearing, KM responded to OPS Corrective Action Order, CPF 4-2000-



5010–H. KM requested DOT to rescind the Corrective Action Order. KM believed that it was in full compliance with all DOT regulations and that the proposed requirements of the CAO were not supported by relevant facts or applicable regulations. KM was represented by outside counsel from Bracewell & Patterson.

- 23) By letter dated *August 27, 2001*, KM outside counsel, Bracewell & Patterson, relayed information to DOT's Hearing Examiner addressing the request for additional information made during the hearing.
- 24) By letter dated *September 7, 2001*, DOT's Presiding Officer submitted a request for additional information.
- 25) By letter dated *September 28, 2001*, KM outside counsel responded to DOT's *September 7, 2001* request for more information. The information was submitted to DOT through our outside counsel, Bracewell & Patterson, LLP.
- 26) By letter dated *March 17, 2003*, DOT issued KM an Amended CAO. The amended CAO requires the following from KM:
  - a) Maintain reduced operating pressure on its Phoenix—Tucson –Davis Monthan AFB line
  - b) Develop a work plan and schedule for conducting internal inspection tests using the same or similar technology which identified the extensive metal loss instances referred to in preliminary Finding 2
    - i) Submit the work plan described in this action item to the Director, Southwest Region, for approval within 30 days of receipt of an amendment to this Order.
    - ii) Submit a report on the results and findings of the internal inspection tests to the Director, Southwest Region, within 30 days of completion of the testing.
- 27) By letter dated *April 14, 2003*, KM acknowledges to DOT the receipt of their Amended CAO:
  - a) KM makes some information corrections such as Davis Monthan AFB pipeline is a separate line and is not directly connected to *LS-53/54*.
  - b) KM informs DOT that *LS-53/54* had been subsequently internally inspected utilizing a Electronic Geometry Pig (EGP) and a Corrosion Detection Pig (CDP). These runs were completed on *March 1, 2003*, and that the final report was to be received around *May 2003* and that a report would be submitted to DOT within 30 days of receiving the final report. KM believed this met the requirements of the Amended Corrective Action Order, dated *March 17, 2003* to internally inspect this line.
- 28) By letter dated *May 29, 2003* (date error on letter), KM informed OPS–SW that it was complying with the requirement of the Amended CAO dated *March 17, 2003* and informs DOT that KM received a Final report on *April 29, 2003*, KM informs DOT of the Following findings:
  - a) There were no “Immediate” repairs as defined by DOT's IMP regulation.
  - b) There were two “60-day” repair conditions. The first was a 3.5 percent dent at 1:10 o'clock position. The second was a 4.7 percent dent at 11:51 o'clock position. KM projects to have both anomalies investigated and necessary repairs before the end of June 2003.
  - c) There were no “180-day” repair conditions reported in the Final report
  - d) KM continues to review the Final Report to determine if additional excavations are warranted.
  - e) KM addressed “two corrosion anomalies from the Final report.
  - f) This update met the requirements of the Amended CAO.

## EXHIBIT 9—SAFETY RECORD STATISTICS

*The Oil Pipeline Industry's Safety Performance:  
Introduction and Summary*

## Introduction and Summary

### Background to Study

*Update of two  
earlier studies*

This report incorporates new data for 2001 to update the findings of a report of the same name published in March 2002, itself an update of a report published in May 1999. Like the two earlier versions, this report was co-sponsored by the Association of Oil Pipe Lines and the American Petroleum Institute's Pipeline Committee as part of their Environmental and Safety Initiative. First begun in 1998, the Initiative's overall goal is to facilitate improvement in the industry's safety record. The steps to achieve that goal include: developing a better understanding of the safety record, including how it has changed and why and what that implies for further improvement; ensuring that the reporting of incidents provides the information needed; and developing materials that the associations and their members can use as they answer inquiries from legislative bodies, regulatory agencies, the press and the public.

*Focus is the  
pipeline  
industry's  
environmental  
and safety record*

Primarily, the report reviews data available from the Department of Transportation's Office of Pipeline Safety on the pipeline industry's oil spills and reportable safety incidents. It also compares the record for pipelines to the record for competing modes of oil transportation. (Reports on other issues and pipeline operation in general are available on the Association of Oil Pipe Lines' website, <http://www.aopl.org/>, and at <http://www.pipeline101.com/>.)

It is important to note that the environmental and safety records of all modes of oil transportation, including pipelines, are excellent, resulting in oil transportation being a relatively small source of oil released to the environment. For instance, according to the Environmental Protection Agency, about 185 million gallons of used motor oil are improperly disposed of each year – dumped on the ground, tossed in the trash (and hence to landfills) or poured down storm sewers and drains. That means that dumped motor oil puts 25 times more oil into the environment than spills from all modes of oil transportation combined.<sup>1</sup>

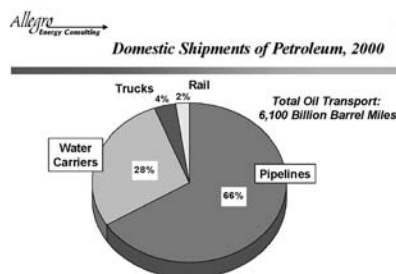
<sup>1</sup> Although this dumped oil is not the industry's responsibility, the size of the problem prompted the American Petroleum Institute to implement a public awareness and recycling campaign to combat this improper consumer disposal of motor oil.

### The Role of Oil Pipelines

*The oil pipeline system, born in World War II, is by far the most important mode of oil transportation*

The development of large diameter pipe during World War II opened the door to the development of the nation's petroleum pipeline system during the post-War boom. By 2000, there were more than 150,000 miles of oil pipelines in the United States under Federal Energy Regulatory Commission rate jurisdiction (hence excluding intra-state and small gathering lines), moving about 14.5 billion barrels<sup>2</sup> of crude oil and refined petroleum products, more than twice the volume finally consumed.

Pipelines are by far the most important mode of petroleum transportation in the United States. In 2000, pipelines carried 66% of all of the oil transported in the United States, as measured in barrel-miles (one barrel transported one mile equals one barrel-mile), while marine transportation accounted for about 28%, trucks 4% and rail 2%.



Source: Estimated from Association of Oil Pipe Lines, Shifts in Petroleum Transportation, 2002

More broadly, oil pipelines in 1999 accounted for 17% of the ton-miles in inter-city freight transportation at only 2% of the total cost, according to Eno Transportation Foundation Inc.'s "Transportation in America, 2000."

*Pipelines are the safest and generally the cheapest way to move oil*

Pipeline systems are recognized as the safest and most economical way to distribute vast quantities of oil from production fields to refineries to consumers. For instance, the cost to transport refined petroleum from Houston to the New York Harbor area via pipeline is about \$1.20/barrel or 3 cents/gallon -- only 3% of even the lowest national average monthly retail price for gasoline in the last five years.

<sup>2</sup> There are 42 gallons in a barrel.

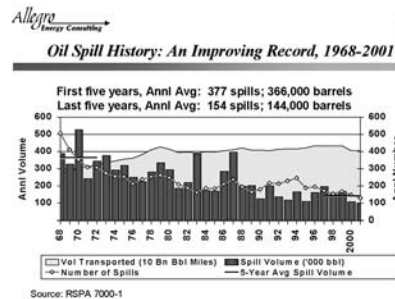
*The Oil Pipeline Industry's Safety Performance:  
Introduction and Summary*

Oil pipelines are usually also the only realistic transportation option for moving significant volumes of petroleum by land over long distances. Replacing a relatively modest 150,000-barrel per day pipeline with a fleet of trucks, each holding 200 barrels or 8,400 gallons, would require some 750 trucks each day, or one arriving and unloading every 2 minutes. Replacing the same pipeline with a unit train of 2000-barrel tank cars would require a 75-car train to arrive and be unloaded every day. Pipelines do sometimes face competition from barges for shipments in intermediate distances along the coast or near major waterways. However, U.S. coastal shipments by ocean-going tank ships, the preferred alternative for most international long distance moves, are limited by the high costs imposed by the Jones Act (legislation that requires all shipments between U.S. ports to be in vessels that are U.S.-built, -operated and -crewed).

### Summary of Key Findings

*Over the long term, oil spills from the pipeline system have become fewer and smaller, especially from line pipe*

**The oil pipeline industry's spill record has improved substantially over the last 34 years**, with both the annual number of spills or other safety incidents and the volume of oil spilled decreasing by about 60%, despite a 42% increase in the amount of oil transported. In the five years from 1968 (the year that data collection began) through 1972, the pipeline system experienced 377 incidents per year that were reportable to the Office of Pipeline Safety (OPS), resulting in an average annual volume of oil spilled of 366,000 barrels. The averages for the most recent five years, 1997-2001, have been reduced to 154 incidents and 144,000 barrels spilled per year.



Furthermore, the volume spilled from line pipe has fallen more rapidly than that from other parts of the system such as tank farms and pump stations. (Spills from line pipe are more likely to be disruptive to the surrounding community, while tank farms and pump stations are generally on company property, with barriers to protect non-company property.)

*Around half of all oil spills involve crude oil; line pipe spills are more important for the other commodities*

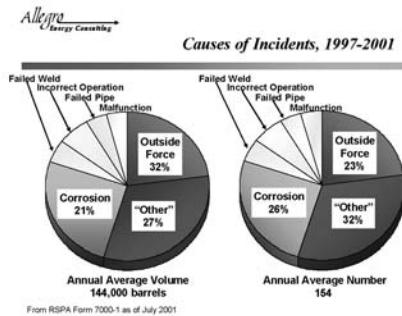
**Crude oil plays a greater role in oil spills than any other commodity.**

Based on the OPS data for 1997-2001, crude oil accounted for approximately half of the spill incidents and of the volume of oil spilled, with slightly over half of the latter released from line pipe. In contrast, refined petroleum products<sup>3</sup> accounted for just over one-fifth of the volume spilled, with almost two-thirds of that from line pipe, and liquefied petroleum gases and natural gas liquids accounted for another fifth, with over 90% of it from line pipe. (The latter pair of products is in a special category called "highly volatile liquids," which are generally gaseous at atmospheric temperature and pressure. They leave little, if any, liquid behind after a release.)

*Outside Force Damage is the most important cause of spilled oil*

**The most important cause of spilled oil is Outside Force Damage.**

Based on 1997-2001, Outside Force Damage accounts for almost one-third of the overall volume of oil spilled. After that, the catchall category "Other" accounts for over one-quarter and the only other important named category, Corrosion, for 21%. Although the number of incidents has a slightly different distribution of causes, the same three categories dominate, again with a combined share of 80%.



<sup>3</sup> The main refined petroleum products transported by pipeline are gasoline, jet fuel, diesel, and home heating oil.

More detailed examination confirms the role of Third Party Damage

**More detailed examination of the data provides more specific spill causes. The significant ones ranked: Damage by Third Parties, first; Corrosion, second; and Equipment-related Failures, third.** A committee of the American Society of Mechanical Engineers (ASME) annually audits and re-categorizes the OPS data with an eye to future prevention. Its compilation confirms the importance of limiting both Corrosion and Third Party Damage, especially to line pipe: Third Party Damage – that caused by excavation, farming or other digging/boring activities – is responsible for 41% of volume spilled from 1996 through 2000. In addition, the audit reclassifies a number of spills into several ASME categories that, along with Malfunction of Control or Relief Equipment, can be broadly characterized as Equipment-related Failures. As a result, Equipment-related Failure becomes the third-ranked cause (18% of volumes) of all spills and the leading cause (45%) of those at tank farms and pump stations.

If spills do occur, initial clean-up efforts recover half the oil, and remediation pushes this toward 100%

**The impact on the environment is significantly less than the spill volumes of this report might indicate, because a large proportion of the barrels included here are later recovered through operator clean up efforts.** Spill data in this report show that, over the 1997-2001 period, pipelines recovered 53% of the oil spilled from their systems in total, and 67% of that spilled at tank farms and pump stations. (These calculations exclude spill volumes for so-called "highly volatile liquids" or HVLs because, on release, HVLs return almost entirely to a gaseous state, leaving minimal, if any, liquid for clean-up or recovery from soils or waters.) The Office of Pipeline Safety's data on recovery are limited to estimates of liquids recovered directly. They exclude remediation and other recovery techniques that may take longer to complete. However, today's environmental standards normally result in the removal or treatment of most, if not all, of the rest of the spilled petroleum, raising ultimate recovery rates toward 100%.

Trucks have a 70% worse spill record than pipelines, but all modes of oil transport have low loss rates

**The initial losses from line pipe discussed above (i.e. not counting recovered volumes) amount to about 1 gallon per million barrel-miles.** In household terms, this is less than 1 teaspoon per thousand barrel miles. The loss rate from barges and trains when they are transporting oil is similarly modest. However, the spill rate from trucks was more than 70% higher than from line pipe over 1997-2001, even when adjusted for different reporting thresholds in the data sources.

If the deciding factor is safety, pipelines are the best option for moving oil

**Pipelines have a better safety record (deaths, injuries, fires/explosions) than other modes of oil transportation.** This is especially true relative to trucks. Over 1997-2001, truck incidents resulted in over 100 times more deaths, over 30 times more injuries, and over 45 times more fires and/or explosions than pipeline incidents did, based on rates per ton-mile of oil moved.

## Figure 2-8: Arizona Hazardous Materials Incidents by Mode

(Not including pipelines)

[Excel](#) | [CSV](#) | [Graphic Version](#)

Year	Highway	Rail	Air	Water
1995	107	18	5	0
1996	206	12	6	0
1997	294	25	14	0
1998	184	11	17	0
1999	260	27	14	0
2000	160	27	17	0

**NOTE FOR DATA ON THIS PAGE:** Hazardous materials incident data are subject to revision and correction by the Office of Hazardous Materials Safety.

**SOURCE FOR DATA ON THIS PAGE:** U.S. Department of Transportation, Research and Special Programs Administration, Office of Hazardous Materials Safety, *Hazmat Summary by State for Calendar Year 2000*, and earlier years, Washington, DC: 2002, available at <http://hazmat.dot.gov/> as of Apr. 24, 2002.

**Table 2-22: Hazardous Liquid Pipeline Incidents**

	1995	1996	1997	1998	1999	2000
<b>Arizona</b>						
Number of incidents	1	0	1	0	0	1
Number of fatalities	0	0	0	0	0	0
Number of injuries	0	0	0	0	0	0
Property damage (\$ thousands)	50	0	50	0	0	0
<b>United States, total</b>						
Number of incidents	188	193	171	153	168	147
Number of fatalities	3	5	0	2	4	1
Number of injuries	11	13	5	6	20	4
Property damage (\$ thousands)	32,519	81,083	42,811	62,865	43,109	115,704

**NOTES:** Historical totals may change as the Office of Pipeline Safety receives supplemental information on incidents. Incidents are reported on Form RSPA F 7100.1. An accident report is required for each failure in a pipeline system in which there is a release of the hazardous liquid or carbon dioxide transported resulting in any of the following:

1. Explosion or fire not intentionally set by the operator;
2. Loss of 50 or more barrels (8 or more cubic meters) of hazardous liquid or carbon dioxide;
3. Escape to the atmosphere of more than 5 barrels (0.8 cubic meters) a day of highly volatile liquids;
4. Death of any person;
5. Bodily harm to any person resulting in: a. loss of consciousness; or b. necessity to carry the person from the scene; or c. necessity for medical treatment; or d. disability which prevents the discharge of normal duties or the pursuit of normal activities beyond the day of the accident;
6. Estimated property damage, including cost of clean-up and recovery, value of lost product, and damage to the property of the operator or others, or both, exceeding \$50,000.

**SOURCE:** U.S. Department of Transportation, Research and Special Programs Administration, Office of Pipeline Safety, available at <http://ops.dot.gov> as of Jan. 7, 2002.

**Table 2-18: Hazardous Materials Incidents: 2000  
(Not including pipelines)**

	Incidents	Deaths	Injuries			Damages (\$ thousands)
			Total	Major	Minor	
Arizona	205	2	4	2	2	630
United States	17,514	13	246	18	228	72,728

**NOTES:** U.S. total includes U.S. territories or foreign locations.

Hazardous material incident locations are often listed as the terminals or sorting centers where they are discovered. Therefore, states with this type of a facility may show a disproportionate number of incidents.

Hazardous materials transportation incidents required to be reported are defined in the Code of Federal Regulations (CFR), 49 CFR Part 171.15, 171.16 (Form F 5800.1).

Hazardous materials deaths and injuries are caused by the hazardous material in commerce.

**NOTE FOR DATA ON THIS PAGE:** Hazardous materials incident data are subject to revision and correction by the Office of Hazardous Materials Safety.

**SOURCE FOR DATA ON THIS PAGE:** U.S. Department of Transportation, Research and Special Programs Administration, Office of Hazardous Materials Safety, *Hazmat Summary by State for Calendar Year 2000*, and earlier years, Washington, DC: 2002, available at <http://hazmat.dot.gov> as of Apr. 24, 2002.



The CHAIRMAN. Thank you, Mr. Bannigan. Mr. Cowley.

**STATEMENT OF DAVID COWLEY, DIRECTOR, PUBLIC AFFAIRS,  
AAA ARIZONA**

Mr. COWLEY. Thank you, Senator. Thank you for the opportunity to testify. AAA Arizona's role in the automotive and transportation arena is familiar to most people. We have over 600,000 members in Arizona alone. AAA advocates with the Government and the automotive industry on behalf of the motoring public. We also strive to educate motorists about the transportation, automotive, and oil industries. Our goal is to provide clarity, common sense, and balance to these issues.

For many years, AAA has tracked and reported gasoline supplies and prices. The media and public turn quickly to AAA for explanations whenever gasoline issues arise as with the August pipeline closure. We've learned that Americans react strongly to bad news about gas prices and availability. What's more, the public is quick to assume that price hikes are the result at the greed at the supplier or retail level and are skeptical about the legitimacy of external pressures forcing gas prices up. Communicating promptly and clearly about unusual supply or pricing issues is critical.

We learned of the pipeline's situation from a media contact on August 11, 3 days after the actual closure, hardly an example of prompt communication from the pipeline industry. There was some initial confusion about the nature of the disruption, again due to an absence of information, but once that was cleared up we issued our first press release explaining the closure. We stated that gas supplies were plentiful, it would take just a little longer to get gasoline into the valley by truck. That was on a Monday.

We issued press releases on Tuesday, August 12, and Wednesday, August 13, each time reporting the price of gas and assuring the public that supplies were plentiful, it was a transportation disruption. Parenthetically, Senator, let me say that the difference between a gasoline shortage and a transportation disruption was more than merely semantics. We felt it was very important to assure the public that gasoline inventories were normal, this was not another 1973. On Thursday, August 14, we issued our weekly fuel gauge report, again calling on motorists to conserve fuel and offering tips on doing so. During this time, my staff and I had held many interviews with the television, radio, and print media, always with that same message.

The panic buying that led to long lines and station closures began Sunday afternoon, August 18, as motorists attempted to refuel after their weekend activities. Stations began running out of gas. Panicked motorists searched for open stations and eventually even motorists who didn't need to fill up joined lines to top off their tanks. Why did it happen? Why, when the disruption had been no more than an inconvenience for almost a week did it suddenly escalate into panic buying? In AAA's view there are two reasons. First, we, and by that I mean those in the oil industry, AAA, and the Government, should have cautioned the public to curtail their weekend activities in order to accommodate the gasoline supply problem. In my recollection, no one specifically said that.

Second, we who had been in the media all week explaining the situation took the weekend off. Although my staff held half a dozen interviews on Saturday and Sunday that was not close to the number we had been doing and we had not issued a press release since our Thursday fuel gauge report. Now could we have prevented a run on gas stations had we been out there in the media more heavily? I can't say. But I can say that communication, the lack thereof, contributed to the severity of this gas crisis.

What have we learned? First, it's time to acknowledge that gasoline is an essential commodity similar to utilities. The principles of free enterprise and competition should be allowed to establish gas pricing, but we also believe the refining industry has an obligation to practice restraint in pricing, especially during emergencies.

Third, as has been said before, we need to take steps to ensure adequate supplies of gasoline to our state with redundancy built into the system. Third, the industry should have practical, practical back-up plans in the event of infrastructure problems. Fourth, if the industry won't speak to the public about supply or pricing issues as seems to be the case, they should at least speak candidly to AAA and the Government. We can then inform the public.

That said, I must point out that AAA will not act as a public relations firm for the oil or any other industry. We value our reputation as a balanced source of information for motorists, and if we think it is necessary we won't hesitate to point out inconsistencies.

Finally, AAA believes all Americans should recognize that fossil fuels are a finite energy resource. We should practice conservation, including the use of carpooling and mass transportation, and we should buy the most energy efficient vehicles that are practical for our needs.

Senator, hearings such as these are an important means of assessing the pipeline closure and subsequent events and preventing a recurrence. AAA hopes there will be a communications component in your recommendations, encouraging managers of essential infrastructure to speak candidly about disruption.

Thank you, Senator McCain. That concludes my statement.  
[The prepared statement of Mr. Cowley follows:]

PREPARED STATEMENT OF DAVID COWLEY, PUBLIC AFFAIRS MANAGER, AAA ARIZONA

Senator McCain. Members of the Committee.

I am David Cowley, Public Affairs Manager at AAA Arizona. Thank you for the opportunity to testify.

AAA Arizona's role in the automotive and transportation arena is familiar to most people—we have 600,000 members in Arizona alone. AAA advocates with the government and the automotive industry on behalf of the motoring public. We also strive to educate motorists about the transportation, automotive and oil industries. Our goal is to provide clarity, common sense and balance to these issues.

For many years, Triple A has tracked and reported gasoline supplies and prices. The media and public turn quickly to AAA for explanations whenever gasoline issues arise, as with the August pipeline closure.

We've learned that Americans react strongly to bad news about gas prices and availability. What's more, the public is quick to assume that price hikes are the result of greed at the supplier or retail level, and are skeptical about the legitimacy of external pressures forcing gas prices up. Communicating promptly and clearly about unusual supply or pricing issues is critical.

We learned of the pipeline situation from a media contact on August 11, three days after the actual closure—hardly an example of prompt communication from the pipeline industry. There was some initial confusion about the nature of the disruption.

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The panic-buying that led to long lines and station closures began Sunday afternoon, August 18. As motorists attempted to refuel after their weekend activities, stations began running out of gas, panicked motorists searched for open stations, and eventually, even motorists who didn't need to fill up joined the lines to top off their tanks.

Why did it happen? Why, when the disruption had been no more than an inconvenience for almost a week, did it suddenly escalate into panic-buying?

In AAA's view, there are two reasons:

1. First, we—by that I mean those in the oil industry, Triple A, and the government—should have cautioned the public to curtail their weekend activities in order to accommodate the gasoline supply problem. In my recollection, no one specifically said that.
2. Secondly, we who had been in the media all week explaining the situation, took the weekend off. Although my staff held half-a-dozen interviews on Saturday and Sunday, that was not even close to the number we had been doing. And, we had not issued a press release since our Thursday Fuel Gauge report.

Could we have prevented the run on gas stations had we been 'out there' in the media more heavily? I can't say. But, I can say communication—the lack thereof—contributed to the severity of the gas crisis.

What have we learned?

- First, it is time to acknowledge that gasoline is an essential commodity, similar to utilities. The principles of free enterprise and competition should be allowed to establish gasoline pricing, but we also believe the refining industry has an obligation to practice restraint in pricing, especially during emergencies.
- Secondly, we need to take steps to insure adequate supplies of gasoline to our state, with redundancy built into the system.
- Third, the industry should have practical—*practical*—backup plans in place in the event of infrastructure problems.
- Fourth, if the industry won't speak to the public about supply or pricing issues—as seems to be the case—they should, at least, speak candidly to Triple A and the government. We can then inform the public. (That said, I must point out that Triple A will NOT act as a Public Relations firm for the oil, or any other, industry. We value our reputation as a balanced source of information for motorists. And, if we think it is necessary, we won't hesitate to point out inconsistencies.)
- Finally, AAA believes all Americans should recognize that fossil fuels are a finite energy resource. We should practice conservation, including the use of carpooling and mass transportation. And, we should buy the most energy efficient vehicles that are practical for our needs.

Senator; Members of the Committee; hearings such as this are an important means of assessing the pipeline closure and subsequent events . . . and preventing a recurrence. AAA hopes there will be a communication component in your recommendations encouraging managers of essential infrastructure to speak candidly about disruptions.

That concludes my statement. I'll be happy to answer your questions.

## PIPELINE CLOSURE TIMELINE

July 31, 2003—Kinder Morgan pipeline ruptures. Line is closed, Federal authorities and the Arizona Corp. Commission is notified. Phoenix unleaded: \$1.541

August 1, 2003—Kinder Morgan reopens the pipeline and runs it at reduced capacity.

August 6, 2003—Federal Office of Pipeline Safety determines the pipeline can be run safely at 80 percent capacity. A failed seam thought to be the origin of the problem.

August 8, 2003—Kinder Morgan decides the problem is more serious and shuts the line down completely. Phoenix unleaded: \$1.536

August 11, 2003—AAA Arizona learns of closure from a media contact. AAA issues first press release explaining the closure. AAA stated that gas supplies were plentiful, transportation issues were holding up supplies, motorists should conserve gas. Phoenix unleaded: \$1.558

August 12, 2003—Extensive media interviews. AAA Arizona sends an update on the closure to the media. Phoenix unleaded: \$1.613

August 13, 2003—Napolitano holds a news conference and predicts no widespread outages based on information from Kinder Morgan. AAA attends this news conference by invitation from the governor's office. AAA Arizona sends another press release update to the media. Phoenix unleaded: \$1.639

August 14, 2003—Kinder Morgan delivers testing plan to the Office of Pipeline Safety. AAA sends pipeline update press release. Phoenix unleaded: \$1.684

Sunday, August 17, 2003—Gas lines form at stations in afternoon. AAA Emergency Road Service reports a spike in members asking for fuel service. Flurry of media interviews in afternoon and early evening. Phoenix unleaded: \$1.767

Monday, August 18, 2003—Gov. Napolitano meets with Valley mayors and other public officials. AAA issues press release calling for calm and advising motorists not to buy gas unless it is needed. Phoenix unleaded: \$1.767

Tuesday, August 19, 2003—Government approves Kinder Morgan's plan to start testing. Napolitano asks for, receives a temporary waiver to the Valley's CBG requirement. AAA sends an update press release. Phoenix unleaded: \$1.866

Wednesday, August 20, 2003—Pipeline fails hydrostatic test. Lines at gas stations start to subside. Fuel is being delivered to the Valley by truck. Phoenix unleaded: \$1.926

Thursday, August 21, 2003—Kinder Morgan announces plans to bypass section of pipeline that failed test, gas should be flowing to Phoenix by the weekend. Unleaded gas in Phoenix: \$2.038

Sunday, August 24, 2003—Kinder Morgan completes bypass of the closed section of pipeline. Gas begins flowing toward Phoenix. Phoenix unleaded: \$2.098

Thursday, August 28, 2003—AAA issues Fuel Gauge Report, noting that high gas prices are not expected to deter motorists from traveling over Labor Day. Phoenix unleaded: \$2.125

**August 2003 Gas Prices During Pipeline Closure***AAA Arizona, 2003*

AAA's Fuel Gauge reports are usually done weekly, on Thursdays. When we became aware of the pipeline situation, we began keeping a daily report. The green rows are weekly reports done before and after the pipeline was closed. Where prices for a particular grade are missing, it is because we generally base our discussions with the press on regular unleaded. Thus, we often skip other grades in our notes. For purposes of discussion during the crisis, we used Phoenix as the benchmark price, rather than going into all the different prices around the Valley.

	Statewide				East Valley				Phoenix			
	Regular	Mid-Grade	Premium	Diesel	Regular	Mid-Grade	Premium	Diesel	Regular	Mid-Grade	Premium	Diesel
8/7/03	1.570	1.636	1.731	1.625	1.513	1.578	1.670	1.622	1.536	1.602	1.694	1.638
8/11/03	1.550				1.546	1.612	1.705	1.617	1.558	1.625	1.718	1.636
8/12/03	1.550				1.591	1.659	1.755	1.621	1.613	1.682	1.779	1.643
8/13/03	1.640				1.633	1.704	1.802	1.635	1.639	1.709	1.808	1.654
8/14/03	1.650				1.679	1.751	1.852	1.643	1.684	1.756	1.857	1.662
8/15/03	1.709				1.708	1.781	1.884	1.668	1.726	1.801	1.904	1.681
weekend												
8/18/03	1.741				1.754	1.830	1.935	1.687	1.767	1.843	1.949	1.698
8/19/03	1.813				1.843	1.922	2.033	1.715	1.866	1.946	2.058	1.709
8/20/03	1.855				1.906	1.988	2.103	1.736	1.926	2.009	2.125	1.728
8/21/03	1.885				1.961	2.045	2.163	1.778	1.981	2.066	2.185	1.747
8/22/03	1.928				2.041	2.129	2.252	1.781	2.038	2.125	2.248	1.762
weekend												
8/25/03	1.966				2.117	2.208	2.335	1.787	2.098	2.188	2.314	1.770
8/26/03	2.008				2.120	2.211	2.339	1.783	2.146	2.238	2.367	1.782
8/27/03	2.005				2.130	2.221	2.349	1.779	2.131	2.222	2.350	1.797
8/28/03	1.998				2.124	2.215	2.342	1.775	2.125	2.216	2.344	1.793
8/29/03	1.994				2.118	2.209	2.337	1.785	2.111	2.202	2.329	1.788
weekend												
9/3/03	1.980				2.076	2.165	2.289	1.759	2.070	2.159	2.284	1.734
9/4/03	1.980	2.065	2.184	1.757	2.080	2.170	2.295	1.760	2.081	2.170	2.295	1.769
9/11/03	1.927	2.010	2.125	1.730	2.008	2.094	2.214	1.713	2.012	2.098	2.219	1.745
9/18/03	1.882	1.963	2.076	1.69	1.956	2.040	2.157	1.665	1.96	2.043	2.161	1.723



Yuma				National			
Regular	Mid-Grade	Premium	Diesel	Regular	Mid-Grade	Premium	Diesel
1.528	1.594	1.686	1.578	1.542	1.637	1.697	1.533
1.583	1.651	1.746	1.569				
1.605	1.674	1.771	1.565				
1.607	1.676	1.773	1.589				
1.668	1.739	1.840	1.600	1.571	1.667	1.728	1.556
1.708	1.781	1.884	1.638				
1.758	1.834	1.939	1.654				
1.812	1.890	1.999	1.649				
1.820	1.898	2.008	1.659				
1.835	1.914	2.024	1.666	1.635			
1.883	1.963	2.077	1.666	1.648			
1.903	1.985	2.100	1.680	1.664			
1.988	2.073	2.192	1.667	1.718			
1.993	2.079	2.199	1.670	1.733			
1.964	2.049	2.167	1.670	1.735			
1.944	2.028	2.144	1.683	1.736			
1.945	2.028	2.145	1.661	1.731			
1.947	2.031	2.148	1.689	1.730	1.837	1.903	1.580
1.929	2.012	2.128	1.657	1.693	1.797	1.862	1.566
1.870	1.951	2.063	1.630	1.673	1.775	1.840	1.554

AAA ARIZONA  
Phoenix, AZ

#### For Immediate Release

#### AAA REPORTS: FUEL PRICES HOLDING STEADY AT THE MIDPOINT OF THE SUMMER DRIVING SEASON

*Phoenix, AZ—July 31, 2003*—Gasoline prices have held steady as the summer driving season continues. The statewide average price for self-serve unleaded gasoline inched 1.3 cents lower from last week to \$1.570 per gallon, according to AAA Arizona's Weekly Fuel Survey. The current average price is 11.8 cents higher than a year ago when the average was \$1.452 per gallon. However, this week's average is 9 cents cheaper than last *month's* average of \$1.660 per gallon.

The national average for gasoline remained unchanged at \$1.523 per gallon. OPEC's meeting earlier today helped pin crude oil prices to \$28.43 per barrel, following their decision to maintain current production levels. OPEC's decision will help keep gasoline prices stable unless major refinery or pipeline problems occur in the U.S. Meanwhile, U.S. gasoline inventories are returning to normal levels following the aftermath of Hurricane Claudette.

AAA found the most expensive average price in California at \$1.747, followed by Nevada, \$1.684 and Montana: at \$1.662 per gallon. The least expensive states to fill up are: South Carolina: \$ 1.386, Georgia: \$1.401 and New Jersey: \$1.413 per gallon.

Arizona pump prices are in concert with the rest of the Nation and are holding ground. Gasoline prices in the southwest region of the state held steady with the exception of Yuma where the average pump price plunged 2.3 cents to \$1.552 per gallon. Prices in the Valley experienced the highest decreases than the rest of the state. Gasoline prices in the West Valley and Scottsdale edged 2.5 cents lower to \$1.525 and \$1.578 per gallon, respectively. This week's survey shows the East Valley's average fuel price as the cheapest in the state at \$1.508 per gallon. Other Arizona prices are shown below. Motorists can visit AAA's website at [www.aaa.com](http://www.aaa.com), then click on News for the latest fuel price information.

	Unleaded	Mid-Grade	Premium	Diesel
<i>Phoenix</i> (city)	1.541	1.607	1.700	1.632
<i>East Valley</i> (Mesa, Gilbert, Chandler, Tempe, Ahwatukee, Apache Queen Crk.)	1.508	1.572	1.663	1.616
<i>West Valley</i> (Peoria, Glendale, Sun City)	1.525	1.591	1.682	1.637
<i>Scottsdale</i> (Scottsdale, Fountain Hills)	1.578	1.646	1.741	1.663

	Unleaded	Mid-Grade	Premium	Diesel
<i>Tucson (city)</i>	1.523	1.588	1.680	1.650
<i>Pima County</i>	1.530	1.595	1.687	1.656
<i>Flagstaff</i>	1.685	1.760	1.858	1.626
<i>Yuma</i>	1.552	1.618	1.711	1.541
<i>Statewide</i>	1.570	1.637	1.731	1.618
<i>National</i>	1.523	1.617	1.675	1.520

AAA continues to advise motorists to practice fuel conservation and continue to maintain their normal fuel purchasing patterns. AAA Arizona recommends the following fuel conservation tips to motorists:

- If you own more than one car—especially if one of your vehicles is a less fuel-efficient truck or SUV—use the more energy-conserving vehicle as often as possible.
- Car pools, van pools and public transit are other potential ways to cut driving expenses and fuel consumption.
- Consolidate trips and errands.
- Find one location where you can take care of all banking, grocery shopping and other chores.
- Slow down. The faster a vehicle travels, the more gas it burns.
- Avoid quick starts and sudden stops, this wastes fuel.
- Routinely maintain your vehicle.
- Lighten the load. A heavier vehicle uses more gasoline, so when packing for a road trip—pack light—and try to pack everything inside the vehicle if possible. Strapping items to the top of a vehicle can create wind resistance.
- Check your vehicle owner's manual. If your vehicle does not require premium or mid-grade fuel, then buy regular unleaded gasoline.

These and other fuel conservation tips and information can be found in AAA's Gas Watcher's Guide. These guides are free to the public and can be picked up at any AAA Arizona office throughout the state.

AAA ARIZONA  
Phoenix, AZ

#### For Immediate Release

##### AAA REPORTS: GASOLINE RETAIL PRICES UNSETTLED

*Phoenix, AZ—August 7, 2003*—Gasoline prices inched upward in many regions of the state this week, sliding downward in others, and ending with the statewide average price for self-serve unleaded gasoline unchanged from last week at \$1.570 per gallon, according to AAA Arizona's Weekly Fuel Survey. This week's average price is 12.9 cents higher than a year ago when the average was \$1.440 per gallon.

The national average cost for gasoline rose to \$1.542 per gallon, 1.9 cents higher than last week. Crude oil prices moved above \$32 per barrel earlier this week due to recent terrorist attacks that bolstered worries among the oil industry. This recent turn of events has created a run-up in wholesale gasoline prices, which will eventually lead to higher retail prices. There are several theories behind the sudden price hike including recent terror attacks in Indonesia and the cancellation of a summit meeting between Israeli and Palestinian leaders.

AAA found the most expensive average price in California at \$1.743, followed by Nevada, \$1.690 and Montana: at \$1.674 per gallon. The least expensive states to fill up are: South Carolina: \$1.395, Georgia: \$1.404 and New Jersey: \$1.418 per gallon.

Locally, pump prices in Southern Arizona inched downward marginally. Tucson's average price dropped by a penny to \$1.513 per gallon, from last week. Prices in the Valley climbed upward with the exception of Phoenix where the average price barely budged by dropping .5 cents to \$1.536 per gallon. Other Arizona prices are shown below. Motorists can visit AAA's website at [www.aaa.com](http://www.aaa.com), then click on News for the latest fuel price information.



	Unleaded	Mid-Grade	Premium	Diesel
<i>Phoenix (city)</i>	1.536	1.602	1.694	1.638
<i>East Valley</i> (Mesa, Gilbert, Chandler, Tempe, Ahwatukee, Apache Queen Crk.)	1.513	1.578	1.670	1.622
<i>West Valley</i> (Peoria, Glendale, Sun City)	1.528	1.593	1.685	1.642
<i>Scottsdale</i> (Scottsdale, Fountain Hills)	1.582	1.650	1.745	1.675
<i>Tucson (city)</i>	1.513	1.578	1.670	1.651
<i>Pima County</i>	1.522	1.587	1.678	1.660
<i>Flagstaff</i>	1.713	1.790	1.890	1.630
<i>Yuma</i>	1.528	1.594	1.686	1.578
<i>Statewide</i>	1.570	1.636	1.731	1.625
<i>National</i>	1.542	1.637	1.697	1.533

AAA continues to advise motorists to practice fuel conservation and continue to maintain their normal fuel purchasing patterns. AAA Arizona recommends the following fuel conservation tips to motorists:

- If you own more than one car—especially if one of your vehicles is a less fuel-efficient truck or SUV—use the more energy-conserving vehicle as often as possible.
- Car pools, van pools and public transit are other potential ways to cut driving expenses and fuel consumption.
- Consolidate trips and errands.
- Find one location where you can take care of all banking, grocery shopping and other chores.
- Slow down. The faster a vehicle travels, the more gas it burns.
- Avoid quick starts and sudden stops, this wastes fuel.
- Routinely maintain your vehicle.
- Lighten the load. A heavier vehicle uses more gasoline, so when packing for a road trip—pack light—and try to pack everything inside the vehicle if possible. Strapping items to the top of a vehicle can create wind resistance.
- Check your vehicle owner's manual. If your vehicle does not require premium or mid-grade fuel, then buy regular unleaded gasoline.

These and other fuel conservation tips and information can be found in AAA's Gas Watcher's Guide. These guides are free to the public and can be picked up at any AAA Arizona office throughout the state.

AAA ARIZONA  
Phoenix, AZ

#### For Immediate Release

##### AAA ADVISES MOTORISTS ON TEMPORARY DISRUPTIONS TO THE PHOENIX GASOLINE SUPPLY

*Phoenix, AZ.—August 11, 2003*—Today, Kinder Morgan, the company operating an 8-inch pipeline between Tucson and Phoenix, temporarily shut down the pipeline as a precautionary measure in connection with an ongoing investigation into a recent rupture. The company is working to get the line back up and running as quickly as possible.

There will be adequate supplies of fuel to meet demand in the Tucson area. In Phoenix, supplies of regular unleaded gasoline will not be impacted in the short term, but there may be temporary shortages of premium gasoline. Motorists are advised not to panic—gasoline is in plentiful supply at the company's Tucson terminal and can be trucked into Phoenix. It is also important to note that the pipeline from

Tucson only carries about 30 percent of the Valley's gas. Seventy percent of Kinder Morgan's gasoline volume to Phoenix will continue normally.

AAA says, don't rush out to buy gas. The surest way to shortages is panic buying. The disruption may well be over before many Phoenicians need to fill up.

Here are some tips on fuel conservation:

- If you own more than one car—especially if one of your vehicles is a less fuel-efficient truck or SUV—use the more energy-conserving vehicle as often as possible.
- Consolidate trips and errands.
- Find one location where you can take care of all banking, grocery shopping and other chores.
- Slow down. The faster a vehicle travels, the more gas it burns
- Avoid quick starts and sudden stops—this wastes fuel.
- Routinely maintain your vehicle.
- Lighten the load. A heavier vehicle uses more gasoline.
- Check your vehicle owner's manual. If your vehicle does not require premium or mid-grade fuel, then buy regular unleaded gasoline.

Remember, gas conservation should be practiced even when there is no disruption in gasoline supplies.

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AAA ARIZONA  
Phoenix, AZ

#### **For Immediate Release**

##### UPDATE FROM AAA ON PIPELINE CLOSURE

*Phoenix, AZ.—August 12, 2003*—The Kinder Morgan pipeline that runs between Tucson and Phoenix is still shut down. 30 percent of the fuel that comes into Phoenix every day is transported through this pipeline. Despite the closure, gasoline is still being distributed to Valley gas stations by fuel trucks. David Cowley, director of AAA Public Affairs says, "A slow down in distribution does not mean we are facing a gasoline shortage. It's just taking longer to get here."

Because of the closure, consumers are seeing price increases at the pump. AAA Arizona reports an average price hike of 5 to 6 cents at Valley gas stations. In the Phoenix metro area, the average price of regular unleaded is \$1.61 compared to \$1.55 yesterday. East Valley gas prices shot up 5 cents from \$1.54 to \$1.59. Scottsdale gas prices jumped 5 cents from \$1.61 to \$1.66 compared to yesterday. Flagstaff gas prices remain unaffected by the pipeline close because gasoline has always been trucked into this area.

Gasoline is now being trucked into Phoenix from Tucson. However this is slower and more expensive. More trucks are being devoted to the transportation of regular unleaded fuel because it is more widely used. If there is a 'shortage', premium fuel will be harder to find because it is used less than regular.

Kinder Morgan has not been able to determine when the pipeline from Tucson to Phoenix will be operational again but AAA predicts gas prices will continue to increase the longer it is down. Here are some fuel saving tips for motorists:

- If you own more than one car—especially if one of your vehicles is a less fuel-efficient truck or SUV—use the more energy-conserving vehicle as often as possible.
- Consolidate trips and errands.
- Find one location where you can take care of all banking, grocery shopping and other chores.
- Slow down. The faster a vehicle travels, the more gas it burns
- Avoid quick starts and sudden stops—this wastes fuel.
- Routinely maintain your vehicle.
- Lighten the load. A heavier vehicle uses more gasoline.
- Check your vehicle owner's manual. If your vehicle does not require premium or mid-grade fuel, then buy regular unleaded gasoline.

AAA ARIZONA  
Phoenix, AZ

**For Immediate Release**

PIPELINE CLOSURE FUELS PUMP PRICE INCREASE

*Phoenix, AZ. August 13, 2003*—The pipeline between Tucson and Phoenix remains closed with no indication from Kinder Morgan as to when it will be repaired. AAA Arizona has received numerous calls from angry motorists about the price of gas, but AAA predicts pump prices will continue to climb the longer the pipeline is down.

Gas prices have skyrocketed since last week. Since last week, the average price increase rose 9 to 12 cents in the Phoenix area. However some gas station's prices have gone beyond that, increasing the price per gallon as much as 20 cents since last week. Since yesterday, gas prices have jumped 3—9 cents around Phoenix. Today, AAA reports that Phoenix and the East Valley have an average price of \$1.63 per gallon. Scottsdale drivers are paying about \$1.67 a gallon and Tucson is up to \$1.57 a gallon.

Flagstaff and other parts of northern Arizona may also see their prices start to rise. Yesterday the average price in Flagstaff was \$1.69 a gallon. However it's jumped three cents to \$1.72. With the pipeline closed, gasoline distribution is slower throughout the state and some gas stations are raising prices. Although there is NO gasoline shortage, transporting fuel by truck is slower and more expensive. This is one of the contributing factors to the price increase around the state. To meet demand, the amount of fuel being pumped into Arizona has increased by 15 percent since Tuesday.

Kinder Morgan, owner of the closed pipeline, is meeting with regulators this week to present a plan to fix the pipeline. Until the pipeline is repaired, AAA advises drivers to practice fuel conservation and give suppliers time to work out these transportation problems.

AAA ARIZONA  
Phoenix, AZ

**For Immediate Release**

AAA WEEKLY FUEL GAUGE REPORT: FUEL PRICES SOAR AFTER 6 WEEKS OF PRICE STABILITY

*Phoenix, AZ—August 14, 2003*—Gasoline prices skyrocketed this week, ending a six-week honeymoon of downward trickling gas prices. This week's statewide average for regular unleaded gasoline hit \$1.646 per gallon, 7.6 cents higher than last week. This is the highest price in the last six weeks since July 2nd when prices were \$1.650 per gallon. Prices a year ago this month averaged \$1.434 per gallon, 21.2 cents lower than the current price.

The temporary shutdown of an 8-inch pipeline between Tucson and Phoenix by Kinder Morgan Partners is partially to blame for the recent rise in prices. The pipeline was closed after a rupture on July 30th spewed 10,000 gallons of gasoline near a new housing development in Tucson. The shutdown has forced KMP to distribute gasoline by truck, which is slower and more expensive. KMP officials are scheduled to meet today with the Office of Pipeline Safety and the Arizona Corporation Commission to present a plan to fix the pipeline.

Prices have also been influenced by recent events on the national front. The national average price for gasoline rose to \$1.571 per gallon, 2.9 cents higher than last week. The recent surge in retail prices reflect crude oil prices that have remained above \$31 per barrel, some refinery problems in the mid-west, and a drop in European gas exports to the U.S.

Gas prices have risen in other parts of the country. AAA found the most expensive average price in California at \$1.808, followed by Nevada, \$1.729 and Washington: at \$1.696 per gallon. The least expensive states to fill up are: South Carolina: \$1.420, Georgia: \$1.445 and New Jersey: \$1.446 per gallon.

Locally, average prices in the state shot up 1.5 to 16.7 cents. Average prices in the East Valley jumped to \$1.680 per gallon, up 16.7 cents from last week. Pump prices in Phoenix rose by 14.8 cents to \$1.684 per gallon. Tucson's average price is \$1.608 per gallon, 9.5 cents higher than last week. Other Arizona prices are shown below. Motorists can visit AAA's website at [www.aaa.com](http://www.aaa.com), then click on News for the latest fuel price information.

	Unleaded	Mid-Grade	Premium	Diesel
<i>Phoenix (city)</i>	1.684	1.756	1.857	1.662
<i>East Valley</i> (Mesa, Gilbert, Chandler, Tempe, Ahwatukee, Apache Queen Crk.)	1.680	1.751	1.852	1.643
<i>West Valley</i> (Peoria, Glendale, Sun City)	1.680	1.752	1.853	1.664
<i>Scottsdale</i> (Scottsdale, Fountain Hills)	1.709	1.782	1.885	1.688
<i>Tucson (city)</i>	1.608	1.677	1.773	1.700
<i>Pima County</i>	1.611	1.681	1.777	1.700
<i>Flagstaff</i>	1.728	1.805	1.906	1.658
<i>Yuma</i>	1.668	1.740	1.840	1.600
<i>Statewide</i>	1.646	1.717	1.816	1.641
<i>National</i>	1.571	1.667	1.728	1.556

AAA continues to advise motorists to practice fuel conservation and continue to maintain their normal fuel purchasing patterns. AAA Arizona recommends the following fuel conservation tips to motorists:

- If you own more than one car—especially if one of your vehicles is a less fuel-efficient truck or SUV—use the more energy-conserving vehicle as often as possible.
- Car pools, van pools and public transit are other potential ways to cut driving expenses and fuel consumption.
- Consolidate trips and errands.
- Find one location where you can take care of all banking, grocery shopping and other chores.
- Slow down. The faster a vehicle travels, the more gas it burns.
- Avoid quick starts and sudden stops, this wastes fuel.
- Routinely maintain your vehicle.
- Lighten the load. A heavier vehicle uses more gasoline, so when packing for a road trip—pack light—and try to pack everything inside the vehicle if possible. Strapping items to the top of a vehicle can create wind resistance.
- Check your vehicle owner's manual. If your vehicle does not require premium or mid-grade fuel, then buy regular unleaded gasoline.

These and other fuel conservation tips and information can be found in AAA's Gas Watcher's Guide. These guides are free to the public and can be picked up at any AAA Arizona office throughout the state.

AAA ARIZONA  
Phoenix, AZ

#### *For Immediate Release*

#### AAA ADVISES MOTORISTS TO CONSERVE FUEL AS GASOLINE SHORTAGES LEAVE PHOENIX MOTORISTS IN DISARRAY

*Phoenix, AZ—August 18, 2003*—The recent pipeline closure has led to temporary disruptions in gasoline supplies to the Phoenix area causing many gas stations to temporarily run out of fuel. There is an adequate supply of gasoline being delivered into the state, but it must be trucked from a Tucson terminal into Phoenix. Trucking gas is slower and more expensive.

Kinder Morgan, the owners of the pipeline, presented a plan for testing it to the Office of Pipeline Safety. They estimate that testing will take 7–10 days from the time they get approval on their plan. The pipeline that runs between Tucson and Phoenix supplies about 30 percent of the fuel used in Phoenix.

Gasoline prices have pushed upward by the closure. The statewide average has jumped nearly ten cents within the last week to \$1.741 per gallon. Average prices

in the Valley have soared between 7 to 10 cents higher than last week. Some gasoline stations in Phoenix have reported prices above \$2.00 per gallon. Flagstaff gas prices have risen slightly to \$1.760 per gallon as tank trucks are redirected from there to the Phoenix area. The average price in Tucson rose 4 cents from \$1.608 to \$1.648 per gallon.

"This situation has prompted motorists to hurry to their local gas station in fear that supplies are dwindling," said David Cowley, AAA Public Affairs Manager. "But, that's not what is happening. We have plenty of gas. Trucking into Phoenix is the bottleneck."

AAA's advice:

- If you have more than half a tank, don't buy gas. Panic buying or constantly topping off your tank puts undue stress on gasoline supplies and makes the supply problem worse.
- Conserve fuel and stay calm.
- Don't drive unless you absolutely must.
- *Carpool* with neighbors (do your grocery shopping together, start a carpool to get the kids to school. . .or walk them to school, etc.)
- Combine errands. Run as many errands as possible in one trip.
- Drive the most fuel-efficient car you have.

"We are not running out of gas," said Cowley. "Such fears are unjustified. If folks will calmly go about their business, conserve fuel, and buy gas only when they need it, we'll get through this situation without serious problems. But, folks have got to calm down."

AAA ARIZONA  
Phoenix, AZ

#### For Immediate Release

##### AAA ARIZONA REPORTS: GAS SHORTAGES CONTINUE TO PLAGUE VALLEY BUT NOT STATEWIDE

*Phoenix, AZ—August 19, 2003*—Gasoline shortages are plaguing motorists in Phoenix, largely due to an unpredicted upsurge in gas buying that began last Sunday night. Today, motorists are lining up at gasoline stations as soon as a tank truck delivers gas.

"We are not running out of gas," said David Cowley, Public Affairs Manager at AAA Arizona. "Such fears are unjustified. If folks will calmly go about their business, conserve fuel, and buy gas only when they need it, we'll get through this situation."

Motorists in other parts of the state should not experience gas shortages in their area, although they will see higher gas prices. Gas supplies are plentiful in rural Arizona and there is no reason not to travel there. Sedona, Flagstaff, and the White Mountains all report adequate gas supplies.

The pipeline closure has sent the statewide price of regular unleaded soaring up 7 cents since the weekend with Arizona's average hitting \$1.813 per gallon. The average price in Tucson jumped 6 cents from yesterday to \$1.710 per gallon. Average prices in Flagstaff climbed 2.3 cents at \$1.783 per gallon from yesterday. Fuel prices in Nogales and Sierra Vista remained stable at \$1.732 and \$1.789 per gallon, respectively. Gas prices in Phoenix have surged 9.9 cents to \$1.866 per gallon from yesterday.

Price hikes are partially blamed on the shutdown of the pipeline that has created distribution bottlenecks throughout the state. The pipeline has been temporarily down since August 8th and normally supplies 30 percent of fuel shipped into Phoenix. Kinder Morgan officials reported they will begin testing the pipeline tonight with hopes to restart the line as early as this weekend, pending government approval. Testing involves pumping pressurized water through the pipeline and checking for leaks.

AAA's advice:

- If you have more than half a tank, don't buy gas. Panic buying or constantly topping off your tank puts undue stress on gasoline supplies and makes the supply problem worse.
- Conserve fuel and stay calm.
- Don't drive unless you absolutely must.

- *Carpool* with neighbors (do your grocery shopping together, start a carpool to get the kids to school. . .or walk them to school, etc.). Check out Valley Metro's Ride Matching site: [www.ShareTheRide.com](http://www.ShareTheRide.com)
- Combine errands. Run as many errands as possible in one trip.
- Drive the most fuel-efficient car you have.

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AAA ARIZONA  
Phoenix, AZ

#### For Immediate Release

AAA Arizona: More Gas Headed for Arizona as Motorists Reduce Consumption  
*Phoenix, AZ—August 20, 2003*—Lines are easing at Phoenix area gas stations upon news from Governor Napolitano that additional gasoline is now reaching the Valley. The Governor also announced yesterday that the EPA has granted a 30-day waiver allowing Phoenixians to use ordinary unleaded gas until the supply crunch ends. That, plus additional gasoline arriving in the pipeline from Southern California, means the supplies expected to reach Phoenix in the next few days are much closer to normal.

Kinder Morgan officials are optimistic that gas will begin to flow in their shut-down pipeline by the weekend—this in spite of a failed test yesterday. A 4-mile section of the pipeline suffered a leak during yesterday's testing, but it is expected that the additional repairs will be completed quickly. There was also news of damage to the Western Pipeline when a truck fell on it. That pipeline, which delivers gas to Arizona from Southern California, has been closed but is expected to re-open later tonight. No disruptions are expected from this minor closure.

"The best news is that motorists are taking the gas conservation message seriously," said David Cowley, Public Affairs Manager at AAA. "Governmental agencies and businesses, including AAA, have employees telecommuting. Traffic is reduced on city streets and, while there are gas lines, they are shorter and fewer. We are getting a handle on this."

The supply slow-down has affected prices statewide, however. Here are the latest average prices for regular unleaded gasoline throughout the state:

• Arizona Statewide \$1.85	• Phoenix East Valley \$1.90	• Sierra Vista \$1.81
• Tucson \$1.72	• Flagstaff \$1.85	• Scottsdale \$1.95
• Phoenix \$1.92	• Nogales \$1.76	• Yuma \$1.82

AAA is continuing to ask motorists to conserve gas by following these basic tips:

- If you have more than half a tank, don't buy gas. Panic buying or constantly topping off your tank puts undue stress on gasoline supplies and makes the supply problem worse.
- Don't drive unless you absolutely must.
- *Carpool* with neighbors (do your grocery shopping together, start a carpool to get the kids to school. . .or walk them to school, etc.). Check out Valley Metro's Ride Matching site: [www.ShareTheRide.com](http://www.ShareTheRide.com)
- Combine errands. Run as many errands as possible in one trip.
- Drive the most fuel-efficient car you have.

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AAA ARIZONA  
Phoenix, AZ

#### For Immediate Release

##### AAA SAYS CONSERVATION KEY TO GAS CRUNCH

*Phoenix, AZ. August 21, 2003*—AAA notes that gas prices continue to rise as the state ends week two of the pipeline closure. Arizona had the third highest gas prices in the Nation this week, with an average of \$1.885 for regular unleaded. The increase, just over 31 cents in two weeks is largely due to the pipeline problem. At a news conference on Wednesday, Governor Napolitano said Kinder Morgan, the pipeline's owners, assured her they would "move heaven and earth" to get the pipeline up and running by Sunday night. Furthermore, additional gas supplies are being brought to the Valley by Kinder Morgan's second pipeline and by truck.

Even so, AAA Arizona *strongly urges* motorists to practice fuel conservation throughout the weekend.

“This might be a good weekend to stay home by the pool,” said David Cowley, Public Affairs Manager at AAA Arizona. “We all need to save gas any way we can to let distributors build gas inventories back up.”

Gas prices have risen in other parts of the country, as well. AAA found the most expensive average price in California at \$2.022, where prices were driven upward by Arizona’s problems. In Oregon, regular unleaded was selling for \$1.889. Prices rose slightly in the Eastern U.S. as well, in part due to refinery outages caused by the Northeast’s power blackout.

	A. Unleaded	B. Mid-Grade	C. Premium	D. Diesel
<i>Phoenix</i> (city)	1.981	2.066	2.185	1.747
East Valley (Mesa, Gilbert, Chandler, Tempe, Ahwatukee, Apache Queen Crk.)	1.961	2.045	2.163	1.778
West Valley (Peoria, Glendale, Sun City)	1.970	2.055	2.174	1.718
Scottsdale (Scottsdale, Fountain Hills)	1.994	2.079	2.199	1.761
Tucson (city)	1.728	1.802	1.906	1.732
Pima County	1.732	1.806	1.910	1.742
Flagstaff	1.863	1.945	2.055	1.780
Yuma	1.835	1.914	2.024	1.666
Statewide	1.885	1.966	2.079	1.739
National	1.635	1.736	1.799	1.569

It is difficult to predict when Arizona’s gas supply will stabilize, so it is essential that drivers continue to conserve fuel:

- If you have more than half a tank, don’t buy gas. Panic buying or constantly topping off your tank puts undue stress on gasoline supplies and makes the supply problem worse.
- Don’t drive unless you absolutely must.
- Combine errands. Run as many errands as possible in one trip.
- Drive the most fuel-efficient car you have.

AAA ARIZONA  
Phoenix, AZ

#### For Immediate Release

##### GAS PRICES EXPECTED TO HOLD STEADY FOR LABOR DAY WEEKEND

*Phoenix, AZ. August 28, 2003*—Gasoline prices around the state are holding steady, as motorists prepare for the Labor Day weekend. Although the pipeline was reopened Sunday, Arizona continues to have the third highest gas prices in the Nation this week, with an average of \$1.998 for regular unleaded. Arizona hit record highs earlier this week when the average price hit \$2.008 per gallon, according to AAA Arizona.

Prices are rising rapidly all throughout the country due to ongoing refinery outages caused by the electrical blackout two weeks ago. AAA’s weekly report shows a nationwide average price of \$1.735 per gallon, the highest recorded price in AAA history. Refineries serving Chicago, Detroit and San Francisco were reported shut-down. AAA believes that if the United States would address the insufficient domestic gasoline refining capacity and the need for gasoline companies to maintain higher reserve inventories then it would be able to minimize the exorbitant price spikes that have adversely affected consumers and the economy for several years.

But high prices are not expected to deter motorists from traveling during the Labor Day Holiday. In fact, AAA projects 33.4 million Americans to travel this weekend with 84 percent traveling by car. AAA Arizona urges motorists to drive carefully and remember these tips in case of a breakdown:

- Carry extra water for your radiator and drinking water for passengers.

- Bring a light blanket and jacket –the desert is cold after the sun goes down.
- Carry a first aid kit, flashlight, flares, jumper cables, duct tape for short-term repairs and a cell phone.

Motorists preparing for a Labor Day trip can expect these prices across the country; Las Vegas: \$1.962, Denver: \$1.653, San Diego: \$2.177, Los Angeles: \$2.137, Dallas: \$1.605 and Santa Fe: \$1.762 per gallon.

Other regional prices are shown below.

	Unleaded	Mid-Grade	Premium	Diesel
Phoenix (city)	2.125	2.216	2.344	1.793
East Valley (Mesa, Gilbert, Chandler, Tempe, Ahwatukee, Apache Queen Crk.)	2.124	2.215	2.342	1.775
West Valley (Peoria, Glendale, Sun City)	2.124	2.215	2.343	1.758
Scottsdale (Scottsdale, Fountain Hills)	2.173	2.267	2.397	1.785
Tucson (city)	1.826	1.904	2.014	1.732
Pima County	1.836	1.915	2.025	1.740
Flagstaff	1.938	2.024	2.137	1.786
Yuma	1.964	2.050	2.167	1.670
Statewide	1.998	2.084	2.204	1.763
National	1.735	1.842	1.910	1.582

The CHAIRMAN. Thank you very much. Mr. Olcott, welcome.

**STATEMENT OF JONATHAN OLCOTT, ESQ., OLCOTT & SHORE, PLLC, ON BEHALF OF THE SILVER CREEK HOMEOWNERS ASSOCIATION**

Mr. OLCOTT. Thank you, Senator. I am a homeowner association attorney and I represent the Silver Creek community. It's a community of approximately 288 homes. There are 240-some in the phase one, which has been completed. The closest home in phase one is about 300 feet from the pipeline. Phase two is not yet completed and not yet occupied, especially the homes that are adjacent to the pipeline. Mr. Spitzer testified that the homes were 37 feet, and that's approximately correct for the building envelope for the actual structures on the lot, but the block wall, the back yard of those homes, is only about 10 feet from that pipeline.

The builder is Monterey Homes, and there has been a lot of discussion today about disclosure and the pipeline was not disclosed in the subdivision public report for phase one. It was disclosed in the subdivision public report for phase two. Who can guess how many people read them? It's a thick document but it is required by the Department of Real Estate.

Shortly after the rupture occurred we had a board meeting and invited the residents to come and discuss the rupture. I met with Kinder Morgan representatives on the site before that meeting and they were frankly rather candid about what had occurred. They didn't try to blame Monterey's grading or any of the dirt movement that had occurred shortly before the rupture. It was interesting at the first meeting that no homeowners in phase one came to discuss



the rupture. There was press at this meeting, but no homeowners came. We had a later meeting in September and Kinder Morgan attended this meeting and also representatives from ADEQ. We hand-delivered invitation cards to all of the homeowners and only 35 to 40 chose to come, and Kinder Morgan at this second meeting explained pipeline safety and disclosures. ADEQ talked about the contamination reporting and remediation plans.

So I can—I can say in my opinion I was quite surprised at the reaction of the residents. I can divide them into two categories. The majority is not overly concerned, and it may be the proximity of these people to the pipeline. Let's keep in mind that the area of phase two is completely unoccupied and those homes that were sprayed with the gasoline have been demolished but no one lived in them. The minority is concerned. They're concerned about property values. There was no disclosure again in phase one. They're concerned about safety and the overall feeling I would say is relief that nobody was in the homes that were doused and having a barbeque when it occurred.

There is an ingress and egress issue at Silver Creek. There's only one means of getting in and out of the community and if there were a calamity and emergency vehicles were coming into the community, it may be difficult for people in the community to leave, and there is a concern and we're working with the board and with Monterey in trying to address that.

I've talked about the disclosure. I'm not aware of any regulations relating to the proximity of structures to gasoline pipelines. Here the block walls are only 10 feet. There were obviously large grading construction equipment right next to the pipeline and in one of the written comments that's been submitted and I also have anecdotal corroboration that there are structures built right over pipelines in certain instances and some in Tucson, so the encroachment issue as a homeowner association attorney representing all these homeowner associations all over the state is something I think that absolutely should be addressed. Thank you, Senator.

[The prepared statement of Mr. Olcott follows:]

PREPARED STATEMENT OF JONATHAN OLCOTT, ESQ., OLCOTT & SHORE, PLLC; ON  
BEHALF OF THE SILVER CREEK HOMEOWNERS ASSOCIATION

My law firm is known as Olcott & Shore, PLLC. We are located in four cities in Arizona: Tucson, Oro Valley, Phoenix and Goodyear. We represent the Silvercreek Homeowners Association ("Silvercreek"). That is the community in which the rupture of Kinder Morgan's pipeline occurred.

A contractor quickly began removing the contaminated dirt. Some of the dirt was piled on the Association's common area. Kinder Morgan is working with us to ensure the soil is remediated. Silvercreek does not own the tract in which the pipeline is located.

The reaction by the community has been surprising. I can divide the community into two classes: (1) the majority is not overly concerned about the rupture and the fact they live near a gasoline pipeline; and (2) the minority are concerned about safety, and a decline in property values.

### 1. Majority

On August 19, the Board of Directors of Silvercreek ("Board") held a Board meeting. In the notice of the meeting to the community, the Board indicated that a topic of deliberation would be the rupture. The media attended the meeting, but the only homeowners who attended did not comment on the rupture.

I met with Kinder, Morgan personnel before the meeting. The Kinder, Morgan representatives invited themselves to the impending Board meeting. We declined

the invitation as premature. They were open and cooperative. They accepted full responsibility for the rupture. They did not blame any other entity for the rupture. They promised to cooperate with Silvercreek to ensure the remediation would be effective. I requested Kinder Morgan to forward to me a copy of the contamination report. I have yet to receive it. Kinder, Morgan has otherwise been cooperative in providing literature on the pipeline location, testing procedures and hazards of living near a gasoline pipeline.

Later we invited Kinder, Morgan to attend another community meeting to update the community on Kinder, Morgan's activities. It occurred in September. Invitation cards were hand-delivered to each household. Silvercreek has 288 households. Approximately 35 to 40 homeowners chose to attend. Many were husband and wife; so less than 35–40 households were represented.

Kinder, Morgan continues to stay in contact with Silvercreek.

The President of Silvercreek is Ramie Fisher. She indicated that the majority of the community appears to accept the rupture of, and proximity to, the pipeline as an acceptable hazard of modern living. Many have indicated to me that they understand that there are hazards involved with the proximity of natural gas and electrical utilities throughout the community. They have seen the signs that disclose the presence of the gasoline pipeline.

## 2. Minority

Silvercreek is a relatively new community. Most homeowners are original owners. The minority has expressed frustration with the lack of disclosure of the pipeline in the Subdivision Public Report. The second phase of Silvercreek is adjacent to the pipeline, and closer to the pipeline than Phase I. The homes in Phase II are still under construction. The Developer did disclose the pipeline in the public report for Phase II.

The Committee should know that the homes that are immediately adjacent to the pipeline are in Phase II and are not occupied. Were they occupied, I suggest the homeowners would have substantial concerns about the pipeline.

It is possible that the minority are those who live closest to the pipeline in Phase I.

The minority has expressed concern about safety. Silvercreek has only one road-way access. The Board is crafting an evacuation plan in the event of a calamity. The minority has also expressed concern that their property values have declined. They are probably correct. I have not confirmed this proposition with an appraiser.

## Additional Observations

I maintain households in both Tempe and Oro Valley. I was traveling back and forth frequently after the rupture. When the shortage and gas lines occurred in Phoenix, I filled my tank in Tucson, Eloy or Casa Grande. The pipeline rupture had little effect on the public in Tucson. Because I am counsel to Silvercreek, I followed the media coverage closely. The rupture received substantially more media coverage in Phoenix than in Tucson.

The CHAIRMAN. Thank you, Mr. Olcott. Do you think that we ought to do whatever we can to increase the regulations that we have concerning disclosure?

Mr. OLCOTT. I think so based on the reaction of the people that, oh my goodness, my property values have decreased, I wouldn't have purchased here had I known it been so close to the gasoline pipeline.

The CHAIRMAN. In other words, how obscure is that information?

Mr. OLCOTT. It's in the public report. I think most people read it, but it certainly did not indicate that the pipeline is 10 feet from your house. The public report says there is a pipeline, see the plat, if the consumer wants to bother to do that. I frankly doubt that anyone really did.

The CHAIRMAN. Maybe we ought to work on getting regulations so that it's far more prominent. Would you agree, Mr. Cowley?

Mr. COWLEY. Yes. I think we have to accept human nature and it happens—with this whole thing we've accepted things the way that they've been for many years, and when this event occurred we all learned something, and we discovered that we should have read

what we didn't read or we should have prepared for something that we didn't prepare for. And I think those are the very kinds of conversations that we ought to be having here in the state subsequent to this event.

The CHAIRMAN. Mr. Cowley, do you believe that there was do you agree with the Attorney General's assessment that there was like only a dozen cases of price gouging?

Mr. COWLEY. Yes. Once again I point out that we don't have a price gouging statute, but had we had one there are probably no more cases than that that would have qualified for it.

The CHAIRMAN. And that's—most of the gas station owners and operators ought to be appreciated for that, for the small number. There must be thousands.

Mr. COWLEY. Well, at AAA we—with the amount of information that we have is somewhat limited. Of course, we have no information on wholesale margins and so on but I agree there's no indication that most retailers were doing anything except reacting to the normal price hikes that were coming to them. Now it's true that margins—it's true that margins rose during that period of time. They started at about 6 cents

The CHAIRMAN. I can see that.

Mr. COWLEY. But that's part of the—in AAA's view, that's also part of the pricing problem of gasoline nationwide. It becomes very volatile and it does that because of the nature of things like OTQs and regulations and so on. Anything that could calm that would perhaps make it easy for us and for consumers to accept these price changes.

The CHAIRMAN. Mr. Bannigan, serious questions can be raised about the continuity of OPS' oversight of your operations, but to me it's clear that for a number of years Kinder Morgan has been aware of corrosion issues that raise serious concerns on both of its pipelines that transport fuel between Tucson and Phoenix. Why did it take until now for you to move expeditiously to replace the problem pipe?

Mr. BANNIGAN. Well, let me address that in several pieces. First, with regard to the general corrosion issues that you reference, on two separate occasions with regard to both the 6-inch pipeline and the 8-inch pipeline we had presented information to the Department of Transportation Office of Pipeline Safety with respect to the effectiveness of the cathodic protection on both those systems. Those reports were delivered to the Government and they were discussed and in fact, with regard to the 6-inch pipeline action order that was received, the Government concurred with our opinion with regard to the effectiveness of the cathodic protection.

Now, with regard to the replacement of the pipeline, Kinder Morgan has been looking at expanding its capacity from the east since well over a year and a half ago. In October of last year we submitted to the Federal Energy Regulatory Commission a petition for a declaratory order that would allow us to charge a regulatory structure, rate structure that we could use to fund this investment, which would be somewhere between \$180- and \$200 million in cost. So that effort was well under way, Mr. Chairman, before this incident occurred. We decided that in light of the fact we were moving forward with this project and the nature of the incident that oc-

curred on July 30, that we would proceed with replacing the 8-inch pipe in the Tucson area with 12-inch pipe. But I will add that all that pipeline has been hydrostatically tested, so there is not a safety issue with that 8-inch pipeline.

The CHAIRMAN. You conducted an internal inspection on a portion of your 6-inch jet fuel pipeline in November 1999 but the results, which revealed significant corrosion, were not known until the following March. Why would it take so long?

Mr. BANNIGAN. The answer to that is very simple. The information that you get from a smart pig run has to be processed and you take the download from the smart pig and it goes to technicians that we retain through our consultants that actually do that effort. That is not uncommon to have a 2- to 3-month lag between the time that a smart pig is run and the time that the data is made available to the company.

The CHAIRMAN. Well, it seems to me some bad things could happen in the interim.

Mr. BANNIGAN. Well, sir, I think as the record demonstrates we have not had bad things happen with regard to generalized corrosion issues on any of our pipelines in the State of Arizona.

The CHAIRMAN. You publicly committed to replacing the remaining 8-inch line between Tucson and Phoenix. It's my understanding that you have yet to provide OPS with a plan to ensure the overall public safety of the pipeline as required by OPS' corrective action order that they issued on August 6. When do you intend to provide OPS with a plan?

Mr. BANNIGAN. Let me clarify for the record exactly that time sequence. You are correct we did receive the corrective action order from the Office of Pipeline Safety on August 6. We responded to that on August 13, and in our response on August the 13th, we made clear to the Office of Pipeline Safety that the nature of the problem we were dealing with was no longer a seam failure but rather it was stress corrosion cracking incident and that we were going to have to modify our plans, including a hydrostatic test of the pipeline.

That plan was submitted and approved by the DOT on the 14th of August. The smart pig run was conducted on the 19. Following that, on September 29, we submitted to the Department of Transportation Office of Pipeline Safety our plan with regard to stress corrosion cracking. We received from them on October 6, the amended corrective action order with regard to stress corrosion cracking. So as a matter of fact our plan was in the hands of the Federal Government before they sent us the amended order.

The CHAIRMAN. How many miles of pipeline do you own?

Mr. BANNIGAN. We own or operate about 10,000 miles of pipeline in the United States.

The CHAIRMAN. How secure is that?

Mr. BANNIGAN. Are you talking from a terrorist threat? Candidly, Senator, there are miles and miles of open stretches of pipeline in this country and it's very difficult to survey all those lines on a constant basis. I think that fact of the matter is that if there were to be a problem from the terrorist incident, the industry can respond very quickly to restoring service. Most service disruptions

can be responded to in anywhere from an 18- to a 36-hour time period.

As you may be aware, there's a crude oil line in the Nation of Colombia that gets attacked by terrorists some 200 times a year and they have crews that just run up and down that pipeline responding to those terrorist threats.

The CHAIRMAN. I want to thank the witnesses. Thank you very much for being here. Mr. Cowley, thank you for everything that AAA does. A lot of our citizens not only here in the valley but throughout America are very much assisted by your good works, including me. Mr. Olcott, thank you very being here. Thank you, Mr. Bannigan. This hearing is adjourned.

[Whereupon, at 10:55 a.m., the hearing was adjourned.]



## A P P E N D I X

PREPARED STATEMENT OF DR. MARK COOPER, DIRECTOR OF RESEARCH,  
CONSUMER FEDERATION OF AMERICA

Mr. Chairman and Members of the Committee,

My name is Dr. Mark Cooper. I am Director of Research of the Consumer Federation of America. The Consumer Federation of America (CFA) is a non-profit association of 300 pro-consumer groups, which was founded in 1968 to advance the consumer interest through advocacy and education. I greatly appreciate the opportunity to appear before you today to discuss the problem of rising gasoline prices and gasoline price spikes.

### **The Upward Spiral of Gasoline Prices**

Although gasoline prices have traditionally risen during the summer driving months of June-August, in the past three years the seasonal upswing has turned into a much more violent price spiral—a sharp price spike followed by a modest decline with stabilization at a higher level than previous years. We have also had out of season price spikes, which exhibit the same roller coaster and ratchet.

A refinery fire here, a pipeline break there, a blackout somewhere else, and prices go through the roof and stay high, because stocks are low and capacity is constrained. Stockpiles and capacity are determined by business decisions, not Mother Nature. How many times does this have to happen before policy makers do something about it? Perhaps policy cannot prevent accidents, although safety regulations could lower their likelihood, but it can definitely diminish the negative impact these accidents have on the public when they happen.

The underlying driver of this gasoline price ratchet has been an increase in the refiner/marketer share of the pump price, called the domestic spread, not foreign crude oil price increases. The domestic price ratchet has resulted from a combination of inadequate capacity and inadequate competition in the industry. The underlying tight market condition is the result of both increasing demand and business decisions that slowed the growth of long-term capacity. The price spiral occurs because suppliers who face weak competition find they can take unilateral actions in tight markets to quickly increase prices and do not have to respond quickly to increase supplies that might lower prices. The result is an increase in profits and an upward spiral of prices.

Energy markets are highly complex. Their volatility poses particular challenges for policy and economic analysis. The key elements are the supply-side difficulties of inadequate competition, insufficient production, transportation and storage interacting with the demand side challenges of providing for a continuous flow of energy to meet inflexible demand, which is subject to seasonal consumption patterns. Public policy must recognize all three factors—supply, demand and competition, if the price ratchet is to be broken in a consumer-friendly fashion.

### *Supply-Side Fundamentals*

On the supply side of the gasoline market, because of the nature of the underlying molecules, the production, transportation and distribution networks are extremely demanding, real time systems. Energy is handled at high pressure, high temperature and under other physical conditions that are, literally, explosive. These systems require perfect integrity and real time balancing much more than other commodities.

Transportation and distribution infrastructure is extremely capital intensive and inflexible. Many sources of energy are located far from consumers, requiring transportation over long distances. The commodities are expensive to transport and store delivered over a network that is sunk in place with limited ability to expand in the short and medium term.

Refineries and pipelines, two key parts of the gasoline distribution chain, are not only capital intensive, but they take long lead times to build. They have significant environmental impacts. In the short term, their capacity is relatively fixed. Refin-

eries must be reconfigured to change the yield of products. Although oil pipelines have largely depreciated their historic, sunk costs, expansion would be capital intensive. Thus, pipeline capacity is generally fixed capacity.

Accidents have a special role in networks such as these. Because of the demanding physical nature of the network, they are prone to happen. Because of the volatile nature of the commodity, accidents tend to be severe. Because of the integrated nature of the network and demanding real time performance, accidents are highly disruptive and difficult to fix.

Given the basic infrastructure of supply in the industry, the availability of stocks to meet changes in demand is the critical factor in determining the flexibility of supply. Under all circumstances, since output is slow to respond to price changes because of its inelasticity, stockpiles, storage and importation of product become a critical element of the gasoline market. Stocks are the key factor in policy responses to market power where supply is inelastic.

Every investigation of every product price spike in the past several years' points to "unusually low stock" as a primary driver of price shocks. Who decides how much capacity to build, how much product to refine and how much gasoline to have on hand? Oil companies. They make those decisions to maximize their profits, given the industry fundamentals that they face.

### **Business Decisions Keep Markets Tight**

There are two clearly identifiable trends affecting the supply side of the gasoline market—a reduction in capacity relative to demand and an increase in concentration.

In 1985 refinery capacity equaled daily consumption of petroleum products. By 2000, daily consumption exceeded refinery capacity by almost 20 percent. The problem is not simply that no new refineries have been built, but that in the past 15 years about 75 refineries were closed. Reductions in storage capacity and the number of gasoline stations of over ten percent have also taken place in just the past half-decade.

These reductions in capacity have been driven in part by a merger wave that has resulted in a significant increase in the concentration of ownership of refinery capacity and gasoline outlets. Four-fifths of regional refinery markets have reached levels of concentration that trigger competitive concerns, even by the standards adopted by the antitrust division of the Reagan administration's Department of Justice. In these markets, the largest four firms account for at least one-half and as much as three quarters of the refined product output. A similar trend has been in evidence at the level of gasoline stations.

Even more ominous for short-term price volatility is the fact that stockpiles have declined dramatically. Storage capacity has been reduced and economic reserves—reserves above what is needed just to keep the system running—have been slashed. The industry now typically has no more than a day or two of gasoline supplies above its operational minimum, compared to a week or so in the 1980s. Thus, there is little reserve capacity to dampen price increases.

The previous discussion focuses on horizontal concentration. Vertical integration between the segments of the industry may have an impact as well. Vertical integration by dominant firms may create a barrier to entry requiring entry at two stages of production, or foreclosing critical inputs for competitors in downstream markets. Vertical arrangements may restrict the ability of downstream operators to respond to local market conditions.

Vertical integration not only removes important potential competitors across stages of production, but also may trigger a wave of integrative mergers, rendering small independents at any stage extremely vulnerable to a variety of attacks.

Gasoline markets are vulnerable to these negative effects of vertical integration. Product must move downstream from the refinery or the tanker to the pump. Vertically integrated operations are closed to independent sources of supply. They may impose zonal pricing formulas or restrictions of sources of supply on their distribution outlets.

With vertical integration the market may be less responsive than it could be both in the short term, since competing product has difficulty getting into individual markets at the end of a vertically integrated chain and in the long term because new competitors in any market may have to enter at several stages of the business. The FTC found this to have had a substantial impact on the market in its study of the midwestern gasoline market.

The mergers and reduction of capacity have been driven by business decisions. Larger, more vertically integrated companies may be more efficient, but they can also exploit tight markets. Gasoline markets have been slow to respond to price in-



creases. The price differentials that build up before product imports are used to increase supplies are far larger than the transportation cost of imports.

The tightening of supply reflects private business decisions in other ways. As suggested by the Federal Trade Commission report, individual companies now may have pricing power, not through collusion but through individual action. That is, with supply and demand tight and a small number of suppliers in each market, individual suppliers recognize that they can influence the price, at least for short periods of time, by withholding supplies. They are no longer the price takers we find in competitive markets; they become price makers in oligopolistic markets.

### **Demand**

The demand side of the market creates additional pressures and vulnerabilities to price spirals. The demand for gasoline does not respond quickly to price in the short term. When demand is “inelastic” as it is in the gasoline market, suppliers have a better chance of making price increases stick when there is little spare capacity. Increasing demand has reduced spare capacity.

The continuous flow of large quantities of product to meet highly seasonal demand is the central characteristic of the demand side of the market. Many discussions of the gasoline market start from the premise that people drive a lot, perhaps too much. But in order to design proper policies to deal with gasoline demand and how it affects the market, we must have an appreciation for why people drive as much as they do. Examining price and income elasticities leads to the conclusion that energy is a necessity of daily life. Recognizing this fact leads to policy choices that can have the greatest impact while imposing the least cost and inconvenience on consumers.

Gasoline consumption is determined by the physical and economic structure of daily life. People need to drive on a daily basis because of the way our communities are built and our transportation systems designed. Stores are far from homes. Homes are far from work. Social and after-school activities are dispersed. In most communities, mass transit is scarce and inconvenient. It is necessary to drive to get from here to there. We own more cars and drive more miles on a household basis over time. These trends and patterns have become stronger and more deeply entrenched as our society has become wealthier and the tendency for two-earner households has grown. For the past three decades there has been an almost perfect, one-to-one correspondence between economic growth and the growth of total miles driven.

The result of the underlying socioeconomic determinants of automobile travel is to render demand “inelastic.” The low elasticity of demand is the critical factor in rendering the gasoline market volatile and vulnerable to abuse. When demand is inelastic, consumers are vulnerable to price increases, since they cannot cut back on or find substitutes for their use of the commodity. When the most important market force in disciplining market power, demand elasticity, is as low as observed for gasoline, there are many opportunities to exercise market power.

Over the 1990s, gasoline consumption grew by a total of almost 20 percent, compared to the 1980s when it grew by only 10 percent. The number of drivers and passenger vehicles increased, as the driving age population expanded. Gasoline consumption per passenger vehicles grew by about 7 percent. About three quarters of that increase was caused by an increase in the number of miles driven and one quarter was caused by the shift to SUVs.

While the shift to SUVs was one striking feature of the 1990s, an equally striking and more important feature of the demand side was the failure of fuel efficiency to improve. If the fuel efficiency of autos had increased as rapidly in the 1990s as it did in the 1980s, autos would have been 20 percent more efficient, getting about 4 miles per gallon more, in 2000. (If there had not been a shift to SUVs, the average fleet efficiency would have been about 1 mile per gallon higher.)

### **Consumer-Friendly Policies to Break the Price Spiral**

In summary, this analysis demonstrates that gasoline markets are volatile and suffer competitive problems. Market fundamentals (inadequate capacity and inelastic supply and demand), market structures (ownership concentration and vertical integration), corporate conduct (capacity and production decisions), and market performance (price and profits) all point toward the potential for the abuse of market power.

Vigorous and broad based public policies should be pursued to implement permanent institutional changes that reduce the chances that markets will be tight and reduce the exposure of consumers to the opportunistic exploitation of markets when they become tight. To achieve this reduction of risk, public policy should be focused on achieving five goals.

*Restore reserve margins by developing both efficiency and production.*

- (1) Increasing fuel efficiency at the rate achieved in the 1980s in the decade ahead would save about 1.5 million barrels per day. That rate of progress could be sustained over several decades.
- (2) Increasing refinery capacity by 10 percent, either through expansion at existing refineries or redevelopment of less than one half the refineries closed in the past decade, would add another 1.5 million barrels per day.
- (3) To the extent investments to meet clean air standards are a barrier to capacity expansion, public policy should find a way to lower the cost of compliance, directly through subsidies or indirectly through research on new technologies, rather than lower the standards.

*Increase market flexibility.*

- (4) Expand stockpiles with tax incentives to hold and draw down supplies in the face of price increases, and/or mandatory stocks requirements as a percentage of sales, and/or government owned/private operated supplies could add to existing stockpiles.
- (5) Larger, more uniform product markets should be developed to expand to increase supply responsiveness, without lowering clear air standards.

*Promote a more competitive industry*

- (6) Further concentration of the petroleum industry should be resisted by vigorous enforcement of the Department of Justice Merger Guidelines.
- (7) Restrictive marketing practices, such as zonal pricing and franchise restrictions on supply acquisition should be investigated and discouraged.

*Deter private actions that make markets tight or exploit market disruptions.*

- (8) Withholding of supply should draw immediate and intense public and governmental scrutiny through a joint Federal state task force of attorney's general.
- (9) The task force or some other entity should develop ongoing databases and information for evaluating industry structure and conduct.
- (10) The incentives to manipulate markets can be reduced by imposing a windfall profits tax that triggers when specific circumstances raise prices and profit sharply.
- (11) Ultimately, market manipulation could be made illegal.

*Provide adequate energy assistance for low-income households.*

- (12) Assistance policies directly targeted at transportation expenditures should be considered.
- (13) Energy assistance programs should be indexed to energy prices.



**Consumer Federation of America**

## **ENDING THE GASOLINE PRICE SPIRAL**

**MARKET FUNDAMENTALS FOR CONSUMER-FRIENDLY  
POLICIES TO STOP THE WILD RIDE**

**July 2001**

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## EXECUTIVE SUMMARY

### THE UPWARD SPIRAL OF GASOLINE PRICES

Although gasoline prices have traditionally risen during the summer driving months of June-August, in the past two years the seasonal upswing has turned into a much more violent price spiral – a sharp price spike followed by a modest decline with stabilization at a higher level than previous years (see Exhibit ES-1). The new plateau for pricing today is over 20 cents per gallon higher. The increased cost per household amounts to over \$150 per year.

The underlying driver of this ratchet has been an increase in the refiner/marketer share of the pump price, not foreign crude oil price increases. The refiner/marketer share doubled in 2000 and doubled again in the first five months of 2001, representing an increased cost to consumers of over \$11 billion just since January 2001.

This paper demonstrates that the price ratchet has resulted from a combination of inadequate capacity and inadequate competition in the industry. The underlying tight market condition is the result of both increasing demand and business decisions that slowed the growth of long-term capacity. The price spiral occurs because suppliers who face weak competition find they can take unilateral actions in tight markets to quickly increase prices and profits and stabilize them at higher levels. Public policy must recognize all three factors, supply, demand and competition, if the price ratchet is to be broken in a consumer-friendly fashion.

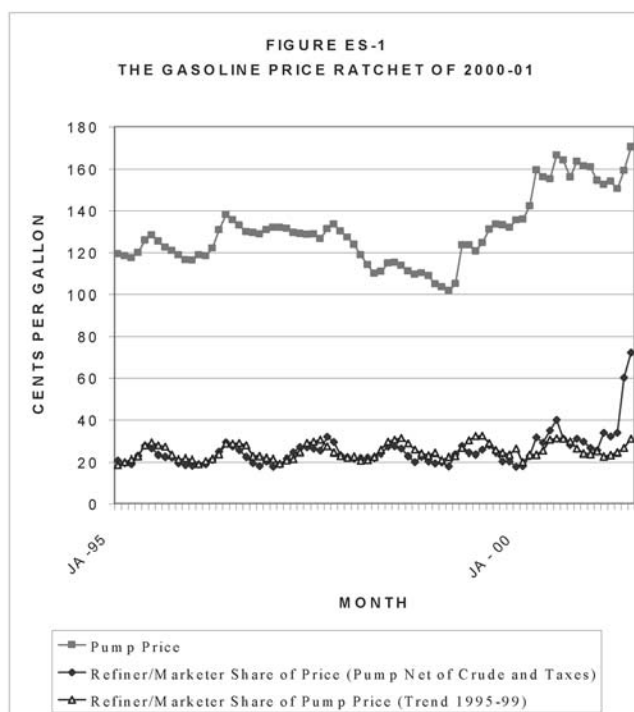
### SUPPLY

There are two clearly identifiable trends affecting the supply side of the gasoline market – a reduction in capacity relative to demand and an increase in concentration.

In 1985 refinery capacity equaled daily consumption of petroleum products. By 2000, daily consumption exceeded refinery capacity by almost 20 percent. The problem is not simply that no new refineries have been built, but that in the past 15 years about 75 refineries were closed. Reductions in storage capacity and the number of gasoline stations of over ten percent have also taken place in just the past half-decade.

These reductions in capacity have been driven in part by a merger wave that has resulted in a significant increase in the concentration of ownership of refinery capacity and gasoline outlets. Four-fifths of regional refinery markets have reached levels of concentration that trigger competitive concerns, even by the standards adopted by the antitrust division of the Reagan administration's Department of Justice. In these markets, the largest four firms account for at least one-half and as much as three quarters of the refined product output. A similar trend has been in evidence at the level of gasoline stations.

Even more ominous for short-term price volatility is the fact that stockpiles have declined dramatically. Storage capacity has been reduced and economic reserves – reserves above what is needed just to keep the system running – have been slashed. The industry now typically has no more than a day or two of gasoline supplies above its operational minimum, compared to a week or so in the 1980s. Thus, there is little reserve capacity to dampen price increases.



Source: U. S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 9.4, for pump prices; *Petroleum Marketing Monthly*, Table 1 for crude prices and Table 6 for prices net of taxes; *Petroleum Supply Monthly*, Table S.4 for quantity supplied.

The mergers and reduction of capacity have been driven by business decisions. Larger, more vertically integrated companies may be more efficient, but they can also exploit tight markets. Gasoline markets have been slow to respond to price increases. The price differentials that build up before product imports are used to increase supplies are far larger than the transportation cost of imports. There is clear evidence of cases in which individual decisions not to increase supplies were intended to keep prices up.

The industry and the Administration have argued repeatedly that the problem of moving product into gasoline markets has been caused by fragmentation of markets due to clean air requirements. Because different markets require different additives to meet their summer clean air targets this makes each market small and inhibits the movement of supply from one area to the next. This compounds the market concentration problem, since within those smaller markets individual suppliers have greater market power, but the underlying structural trends of reduced capacity and increased concentration in the industry must receive primary attention.

#### **DEMAND**

The demand side of the market creates additional pressures and vulnerabilities to price spirals. The demand for gasoline does not respond quickly to price in the short term. When demand is "inelastic" as it is in the gasoline market, suppliers have a better chance of making price increases stick when there is little spare capacity. Increasing demand has reduced spare capacity.

Over the 1990s, gasoline consumption grew by a total of almost 20 percent, compared to the 1980s when it grew by only 10 percent. The number of drivers and passenger vehicles increased, as the driving age population expanded. Gasoline consumption per passenger vehicles grew by about 7 percent. Of that increase about three quarters was caused by an increase in the number of miles driven and one quarter was caused by the shift to SUVs.

While the shift to SUVs was one striking feature of the 1990s, an equally striking and more important feature of the demand side was the failure of fuel efficiency to improve. If the fuel efficiency of autos had increased as rapidly in the 1990s as it did in the 1980s, autos would have been 20 percent more efficient, getting about 4 miles per gallon more, in 2000. (If there had not been a shift to SUV's, the average fleet efficiency would have been about 1 mile per gallon higher.)

#### **CONSUMER-FRIENDLY POLICIES TO BREAK THE PRICE SPIRAL**

In summary, this analysis demonstrates that gasoline markets are volatile and suffer competitive problems. Market fundamentals (inadequate capacity and inelastic supply and demand), market structures (ownership concentration and vertical integration), corporate conduct (capacity and production decisions), and market performance (price and profits) all point toward the potential for the abuse of market power.

Vigorous and broad based public policies should be pursued to implement permanent institutional changes that reduce the chances that markets will be tight and reduce the exposure of consumers to the opportunistic exploitation of markets when they become tight. To achieve this reduction of risk, public policy should be focused on achieving five goals.



**Restore reserve margins by developing both efficiency and production.**

- (1) Increasing fuel efficiency at the rate achieved in the 1980s in the decade ahead would save about 1.5 million barrels per day. That rate of progress could be sustained over several decades.
- (2) Increasing refinery capacity by 10 percent, either through expansion at existing refineries or redevelopment of less than one half the refineries closed in the past decade, would add another 1.5 million barrels per day.
- (3) To the extent investments to meet clean air standards are a barrier to capacity expansion, public policy should find a way to lower the cost of compliance, directly through subsidies or indirectly through research on new technologies, rather than lower the standards.

**Increase market flexibility.**

- (4) Expand stockpiles with tax incentives to hold and draw down supplies in the face of price increases, and/or mandatory stocks requirements as a percentage of sales, and/or government owned/private operated supplies could add to existing stockpiles.
- (5) Larger, more uniform product markets should be developed to expand to increase supply responsiveness, without lowering clean air standards.

**Promote a more competitive industry**

- (6) Further concentration of the petroleum industry should be resisted by vigorous enforcement of the Department of Justice Merger Guidelines.
- (7) Restrictive marketing practices, such as zonal pricing and franchise restrictions on supply acquisition should be investigated and discouraged.

**Deter private actions that make markets tight or exploit market disruptions.**

- (8) Withholding of supply should draw immediate and intense public and governmental scrutiny through a joint federal state task force of attorney's general.
- (9) The task force or some other entity should develop ongoing databases and information for evaluating industry structure and conduct.
- (10) The incentives to manipulate markets can be reduced by imposing a windfall profits tax that triggers under specific circumstances of price and profit increases.
- (11) Ultimately, market manipulation could be made illegal.

**Provide adequate energy assistance for low-income households.**

- (10) Assistance policies directly targeted at transportation expenditures should be considered.
- (11) Energy assistance programs should be indexed to energy prices.

## I. INTRODUCTION

### A. CONTEXT FOR THE ANALYSIS OF GASOLINE MARKETS

Ever since the gasoline lines and oil price shocks of the 1970s, the price and availability of gasoline have been a flashpoint for U.S. energy policy and politics. While consumers have become accustomed to an upswing in prices during the summer driving months of June-August, followed by a downturn in the fall, in the past two years the seasonal upswing has turned into a much more violent price spiral – a sharp price spike followed by a much smaller decline with stabilization at a higher level than previous years (see Figure 1).

The underlying driver of this ratchet has been an increase in the refiner/marketer share of the pump price, not foreign crude oil price increases. The refiner/marketer share doubled in 2000 and doubled again in the first five months of 2001, representing an increase of \$11 billion just since January 2001.

These price increases are felt deeply by consumers because gasoline is a necessity for daily activity. The new plateau for pricing is about 20 cents per gallon higher.<sup>1</sup> The increased cost per household amounts to approximately \$150 per year.

Moreover, the impact of gasoline price increases is not evenly distributed (see Exhibit 2). Lower and middle income households (those with income below \$30,000 per year) who have automobiles spend between 5 and 10 percent of their income on gasoline.<sup>2</sup> For them, the 20-cent per gallon increase could take an additional one percent of their income. In contrast, upper income households (those with incomes above \$75,000 per year) devote less than 2 percent of their income to gasoline consumption. For them the increase would be only .2 percent.

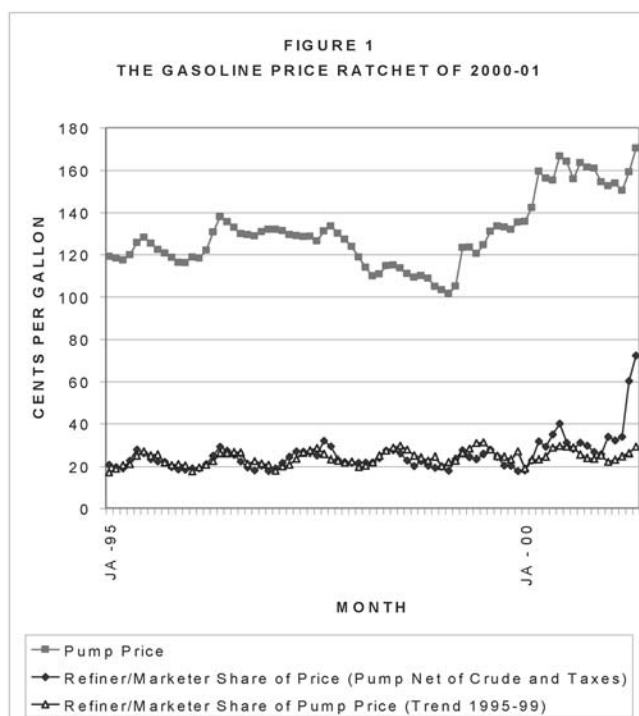
Judging from public opinion polls, the energy price roller coaster imposes substantial discomfort on consumers<sup>3</sup> and raises doubts about the underlying causes.<sup>4</sup> The public certainly seems to have rejected the explanation offered by President Bush in releasing the National Energy Policy Task Force Report that “Overdependence on any one source of energy, especially

<sup>1</sup> The spread in February 2001, even before the most recent gasoline spiral took off was “about 5 cents over what we would typically see this time of year,” (see Cook, John, *Petroleum Outlook: More Volatility?*, Energy Information Administration presentation to the MPR Annual Meeting, March 19, 2001, slide 14).

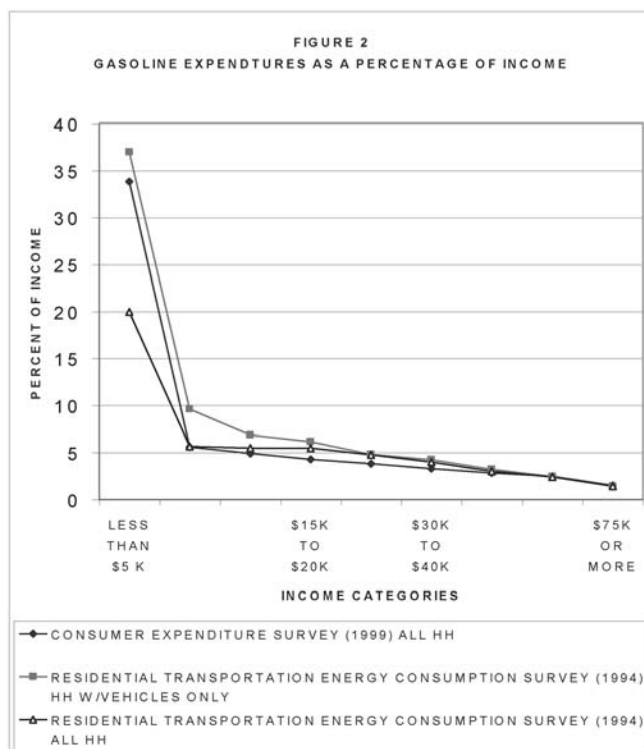
<sup>2</sup> The most recent federal data available is for 1994, thus this statement is based on the U.S. Department of Energy, Energy Information Administration, *Household Vehicle Energy Consumption: 1994*, Table 5.2, compared to *Residential Energy Consumption Survey: 1994*, Table 5.1.

<sup>3</sup> In a Bloomberg poll of June 3, 2001 41% said the price of gasoline was a big problem, while 43% said it was a small problem. Only 15 percent said it was not a problem.

<sup>4</sup> Results from a Field Poll in California (May 24, 2001) and a national public opinion poll (reported on NBC nightly news on May 22, 2001) show that the majority of respondents reject the notion that supply shortages have increased prices. Rather they blame the problem on companies and governments (domestic or foreign). In a Bloomberg poll of June 3, 2001, oil companies were most often cited as the cause of high gasoline prices (43%) followed by oil producing nations (32%) and the Bush administration (9%).



Source: U. S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 9.4, for pump prices; *Petroleum Marketing Monthly*, Table 1 for crude prices and Table 6 for prices net of taxes; *Petroleum Supply Monthly*, Table S.4 for quantity supplied.



Source: U.S. Department of Energy, *Household Vehicle Energy Consumption: 1994*, Table 5.2; *Residential Energy Consumption Survey: 1994*, Table 5.1. U. S. Bureau of the Census, Department of Labor Statistics, *Consumer Expenditure Survey: 1999*, Table 2.

a foreign source, leaves us vulnerable to price shocks, supply interruptions and in the worst case, blackmail.<sup>6</sup> The public does not support the policy of drilling for more oil to respond to foreign threats<sup>5</sup> as the best solution to a problem that they believe is domestic in nature.<sup>7</sup>

## B. OUTLINE OF THE PAPER

Is public opinion misguided?<sup>8</sup> Or, is there an explanation of recent price spikes that is consistent with their perceptions and policy preferences?

This paper presents a multifaceted view of the gasoline price problem that considers both the supply and demand sides of the market, taking into account basic conditions and market structures. It demonstrates that the gasoline market suffers from a lack of capacity, an inability to respond quickly to price increases or supply disruptions and a lack of competition. Furthermore, to a significant extent the lack of capacity and the slow response of supply to price changes are the result of a lack of competition. Looking beyond the crisis of the moment, the paper concludes that fundamental public policy measures should be instituted to prevent the inherent volatility of energy markets from continually buffeting the public.

Chapter II presents the analytic framework. It discusses the market fundamentals that make the analysis of energy markets extremely complex and also renders the gasoline market volatile and vulnerable to market abuse.

Chapter III analyzes the structure, conduct and performance of the gasoline market. It shows that business decisions and government policies interacted to suppress production capacity and constrict market flexibility. Moreover, because the industry is dominated by a small number of large, international, vertically integrated companies, exploitation of tight markets results in rapid, short-term price spikes and increases in profits.

Chapter IV analyzes briefly the equity issues in rising gasoline prices.

Chapter V presents policy observations based upon the analysis of structural problems in the gasoline market. It then discusses specific long and short-term measures that can be taken to alleviate the immediate burden on consumers, prevent excessive market volatility from harming the public, and to diminish the potential for price manipulation.

The analysis and recommendations are at the same level of detail as the Bush Administration's recent *National Energy Policy*. It discusses broad trends and basic structures in

<sup>5</sup> "Text of the Speech of President Bush," *Washington Post*, May 18, 2001.

<sup>6</sup> National Energy Policy Development Group, *National Energy Policy*, May 2001, (hereafter, NEPDG).

<sup>7</sup> An *ABC/Washington Post* public opinion poll in early June 2001, found that 81 percent of the respondents strongly supported a policy to "require car manufacturers to improve the fuel efficiency of vehicles sold in this country," compared to 49 percent who strongly supported "increase in oil and gas drilling." A *New York Times* poll, June 22, 2001, shows that conservation is preferred to drilling by more than three-to-one.

<sup>8</sup> After the House of Representatives voted to block drilling in wilderness and national monument areas, Bill Tauzin (R-La.) Chairman of the House Energy and Commerce Committee is reported to have said "The vote yesterday was literally like an ostrich sticking its head in the sand hoping the problem doesn't show up," *Energy Daily*, June 25, 2001.

the industry. It recommends principles for energy policy and the most promising targets for policy development. In this way, it tells policymakers where to devote their attention in developing policy, but it does not provide detailed cost benefit analysis of specific policy measures.

## II. MARKET FUNDAMENTALS

### A. ANALYTIC FRAMEWORK AND CONTEXT

#### 1. Analyzing Complex Markets

The paper uses the structure, conduct, performance paradigm (SCP) to evaluate the pricing behavior in the gasoline market.<sup>9</sup> The analytic framework enables us to understand the causes of the problems in the industry and arrive at policies to respond effectively. The elements of the approach can be described as follows.

In SCP analysis the central concern is with market performance, since that is the outcome that affects consumers most directly. The concept of performance is multidimensional.<sup>10</sup> The measures of performance to which we traditionally look are pricing, quality and profits. Pricing and profits address both efficiency and fairness. They are the most direct measure of how society's wealth is being allocated and distributed.

The performance of industries is determined by a number of factors, most directly the conduct of market participants. Do they compete? What legal tactics do they employ? How do they advertise and price their products?<sup>11</sup>

Conduct is affected and circumscribed by market structure.<sup>12</sup> Market structure includes an analysis of the number and size of the firms in the industry, their cost characteristics and

<sup>9</sup> Scherer, F. M. and David Ross, *Industrial Market Structure and Economic Performance* (Boston, Houghton Mifflin: 1990). Shepherd, William, G., *The Economics of Industrial Organization* (Prentice Hall, Englewood Cliffs, N.J., 1985).

<sup>10</sup> Scherer and Ross, p. 4.

We begin with the fundamental proposition that what society wants from producers of goods and services is good performance. Good performance is multidimensional... Decisions as to what, how much and how to produce should be efficient in two respects: Scarce resources should not be wasted, and production decisions should be responsive qualitatively and quantitatively to consumer demands.

The operations of producers should be progressive, taking advantage of opportunities opened up by science and technology to increase output per unit of input and to provide consumers with superior new products, in both ways contributing to the long-run growth of real income per person.

<sup>11</sup> Scherer and Ross, p. 4.

Performance in particular industries or markets is said to depend upon the conduct of sellers and buyers in such matters as pricing policies and practices, overt and tacit interfirm cooperation, product line and advertising strategies, research and development commitments, investment in production facilities, legal tactics (e. g. enforcing patent rights), and so on.

<sup>12</sup> Scherer and Ross, p. 5.

barriers to entry. Basic conditions of supply and demand also deeply affect market structure.<sup>13</sup>

The focal point of market structure analysis is to assess the ability of markets to support competition, which "has long been viewed as a force that leads to an ideal solution of the economic performance problem, and monopoly has been condemned."<sup>14</sup> The predominant reason for the preference for competitive markets reflects the economic performance they generate, although there are political reasons to prefer such markets as well.<sup>15</sup> In particular, competition fosters efficient allocation of resources, absence of excess profit, lowest cost production and provides a strong incentive to innovate.<sup>16</sup> Where competition breaks down, firms are said to have market power<sup>17</sup> and the market falls short of these results.<sup>18</sup>

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Conduct depends in turn upon the structure of the relevant market, embracing such features as the number and size distribution of buyers and sellers, the degree of physical or subjective differentiation prevailing among competing seller's products, the presence or absence of barriers to entry of new firms, the ratio of fixed to total costs in the short run for a typical firm, the degree to which firms are vertically integrated from raw material production to retail distribution and the amount of diversity or conglomerateness characterizing individual firms' product lines.

<sup>13</sup> Scherer and Ross, p. 5.

Market structure and conduct are also influenced by various basic conditions. For example, on the supply side, basic conditions include the location and ownership of essential raw materials; the characteristics of the available technology (e.g. batch versus continuous process productions or high versus low elasticity of input substitution); the degree of work force unionization; the durability of the product; the time pattern of production (e.g. whether goods are produced to order or delivered from inventory); the value/weight characteristics of the product and so on. A list of significant basic conditions on the demand side must include at least the price elasticity of demand at various prices; the availability of (and cross elasticity of demand for) substitute products; the rate of growth and variability over time of demand; the method employed by buyers in purchasing (e.g. acceptance of list prices as given versus solicitation of sealed bids versus haggling); and the marketing characteristics of the product sold (e.g. specialty versus convenience shopping method).

<sup>14</sup> Scherer and Ross, p. 15.

<sup>15</sup> Scherer and Ross, p. 18.

<sup>16</sup> Scherer and Ross, p. 20.

The cost of producing the last unit of output – the marginal cost – is equal to the price paid by consumers for that unit... It implies efficiency of resource allocation...

With price equal to average total cost for the representative firm, economic (that is, supra normal) profits are absent...

In long-run equilibrium, each firm is producing its output at the minimum point on its average total cost curve...

One further benefit is sometimes attributed to the working of competition, although with less logical compulsion. Because of the pressure of prices on costs, entrepreneurs may have especially strong incentives to seek and adopt cost-saving technological innovation. Indeed, if industry capacity is correctly geared to demand at all times, the *only* way competitive firms can earn positive economic profits is through innovative superiority.

<sup>17</sup> Scherer and Ross, pp. 17...18.

Pure monopolists, oligopolists, and monopolistic competitors share a common characteristic: each recognizes that its output decisions have a perceptible influence on price... All three types possess some degree of power over price, and so we say that they possess monopoly power or market power...

Pure and perfect competition is rare, but the competitive goal is important.<sup>19</sup> Therefore, a great deal of attention has been focused on the relative competitiveness of markets and the conditions that make markets more competitive or workably competitive.<sup>20</sup> Further, specific measures of the extent of market power based on elasticities of supply and demand and market concentration (measured by the market shares of firms) have been developed.<sup>21</sup>

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The power over price possessed by a monopolist or oligopolist depends upon the firm's size *relative to the market* in which it is operating.

<sup>18</sup> Scherer and Ross, Chapter 18.

<sup>19</sup> Scherer and Ross, p. 16...17.

<sup>20</sup> Summarizing the literature, Scherer and Ross, pp. 53-54 develop a long list of characteristic.

<sup>21</sup> As already noted, Scherer and Ross point out that market power allows a firm to set price above cost and achieve above normal profits. Landes, W. M. and R. A. Posner, "Market Power in Anti-trust Cases," *Harvard Law Review*, 19: 1981, two prominent conservative economic analysts offer a similar concept. The most frequent starting point for a discussion of the empirical measurement of the price impact of monopoly power is the *Lerner Index*. As Scherer and Ross (PP. 70...71) note, the *Lerner Index*, is defined as

$$[L] = (\text{Price} - \text{Marginal Cost}) / \text{Price}.$$

Its merit is that it directly reflects the allocatively inefficient departure of price from marginal cost associated with monopoly. Under pure competition,  $[L]=0$ . The more a firm's pricing departs from the competitive norm, the higher is the associated Lerner Index value. A related performance-oriented approach focuses on some measure of the net profits realized by firms or industries.

Landes and Posner (pp. 938-945) state the price cost margin as the firm's elasticity of demand. They then transform the index into an expression that uses market shares of firms and the market elasticity of demand and supply.

We point out that the Lerner index provides a precise economic definition of market power, and we demonstrate the functional relationship between market power on the one hand and market share, market elasticity of demand, and supply elasticity of fringe competitors on the other.

$$L = \frac{(P - C)}{P} = \frac{1}{\frac{P}{E_d} + \frac{S}{e_m + e_j(1-s_i)}}$$

where:

$S$  = the market share of the dominant firm

$d$

$e_m$  = elasticity of demand in the market

$s$

$e_j$  = elasticity of supply of the competitive fringe

$j$

$s_i$  = market share of the fringe.

In words this formula says that the markup of price over cost will be directly related to the market share of the dominant firm and inversely related to the ability of consumers to reduce consumption (the elasticity of demand) and the ability of other firms (the competitive fringe) to increase output (the elasticity of this supply). These are market characteristics and fundamentals that are accessible to economic analysts. They form the focal point of the analysis in this paper.



## 2. Recognizing the Complexity of Gasoline Markets

The multidimensional view of markets offered by the SCP framework fits the fundamental economic traits of energy production and consumption well. Energy markets are highly complex. Their volatility poses particular challenges for policy and economic analysis.<sup>22</sup>

Contrasting energy commodities to financial instruments like stocks and bonds, a recent book entitled *Energy Risk*, identified the uniqueness of energy markets. The key elements are the supply-side difficulties of production, transportation and storage, and the demand side challenges of providing for a continuous flow of energy to meet inflexible demand, which is subject to seasonal consumption patterns.

[T]he deliverables in money markets consist of a "piece of paper" or its electronic equivalent, which are easily stored and transferred and are insensitive to weather conditions. Energy markets paint a more complicated picture. Energies respond to the dynamic interplay between producing and using; transferring and storing; buying and selling – and ultimately "burning" actual physical products. Issues of storage, transport, weather and technological advances play a major role here.

In energy markets, the supply side concerns not only the storage and transfer of the actual commodity, but also how to get the actual commodity out of the ground. The end user truly consumes the asset. Residential users need energy for heating in the winter and cooling in the summer, and industrial users' own products continually depend on energy to keep the plants running and to avoid

<sup>22</sup> To appreciate the volatility of these markets and the challenge they pose for analysis, we can consider the problems that the Department of Energy has had in projecting gasoline prices. We can start with a mid-1997, report from the Department of Energy (U.S. Department of Energy, Energy Information Administration, *Motor Gasoline Assessment: Spring 1997*, July 1997, p. 45) that attempted to anticipate gasoline prices just a few months ahead by stating the following.

A mid-June update of the April Short-Term-Energy Outlook bodes well for drivers. Summer gasoline prices should stay below last year's summer prices as a result of low crude oil prices and normal seasonal declines from June.

Within a month, prices were rising dramatically. Less than a year later, the Department of Energy's *Assessment of Summer 1997 Motor Gasoline Price Increase* (U.S. Department of Energy, Energy Information Administration, May 1998, p. 1) described what had happened as follows.

As the summer of 1997 was coming to a close, consumers experienced yet another surge in gasoline prices. Unlike the previous increase in spring 1996, crude oil was not a factor. The late summer 1997 price increase was brought about by the supply/demand fundamentals in the gasoline markets, rather than the crude oil markets.

The nature of the summer 1997 gasoline price increase raised questions regarding production and imports. Given very strong demand in July and August, the seemingly limited supply response required examination. In addition, the price increase that occurred on the West Coast during late summer exhibited behavior different than the increase east of the Rocky Mountains.

A similar ambivalence afflicted the summer of 2001 predictions, with early warning of very high prices followed by downward revisions. Volatility is certainly the order of the day (see Cook, John, *Petroleum Outlook: More Volatility?*, Energy Information Administration presentation to the MPRA Annual Meeting, March 19, 2001).

the high cost of stopping and restarting them. Each of these energy participants – be they producers or end users – deals with a different set of fundamental drivers, which in turn affect the behavior of energy markets...

What makes energies so different is the excessive number of fundamental price drivers, which cause extremely complex price behavior.<sup>23</sup>

A recent analysis of the Midwest price spikes of 2000 conducted by the Federal Trade Commission demonstrates the complex interaction of these factors the gasoline market. Very tight gasoline supplies in the Midwest were the result of long-term trends in supply and demand, business decisions and regulatory requirements, as well as unforeseen events. The price increase was exacerbated by the failure of the industry to react quickly to increase supply and decisions to keep supply off the market.

Prices rose both because of factors beyond the industry's immediate control and because of conscious (but independent) choices by industry participants...

In sum, the evidence does not indicate that the price spike in Midwest gasoline in the spring and early summer 2000 was caused by a violation of the antitrust laws. The spike appears to have been caused by a mixture of structural and operating decisions made previously (high capacity utilization, low inventory levels, the choice of ethanol as an oxygenate), unexpected occurrences (pipeline breaks, production difficulties), errors by refiners in forecasting industry supply (misestimating supply, slow reactions), and decisions by firms to maximize their profits (curtailing production, keeping available supply off the market). The damage was ultimately limited by the ability of the industry to respond to the price spike within three or four weeks with increased supply of products. However, if the problem was short-term, so too was the resolution, and similar price spikes are capable of replication. Unless gasoline demand abates or refining capacity grows, price spikes are likely to occur in the future in the Midwest and other areas of the country.<sup>24</sup>

These two observations, one generally about energy, the other specific to gasoline, set the stage for the complex picture that must be drawn to understand gasoline pricing behavior. They both point to the important role of supply and demand fundamentals.

## **B. FUNDAMENTALS OF GASOLINE SUPPLY**

On the supply side of the gasoline market, because of the nature of the underlying molecules, the production, transportation and distribution networks are extremely demanding, real time systems. Energy is handled at high pressure, high temperature and under other physical conditions that are, literally, explosive. These systems require perfect integrity and real time balancing much more than other commodities.

<sup>23</sup> Pillipovic, Dragana, *Energy Risk: Valuing and Managing Energy Derivates* (McGraw-Hill, New York: 1998), p. 3.

<sup>24</sup> Federal Trade Commission, *Midwest Gasoline Price Investigation*, March 29, 2001, pp. i... 4.

Transportation and distribution infrastructure is extremely capital intensive and inflexible. Many sources of energy are located far from consumers, requiring transportation over long distances. The commodities are expensive to transport and store delivered over a network that is sunk in place with limited ability to expand in the short and medium term.

Refineries and pipelines, two key parts of the gasoline distribution chain, are not only capital intensive, but they take long lead times to build. They have significant environmental impacts. In the short term, their capacity is relatively fixed. Refineries must be reconfigured to change the yield of products. Although oil pipelines have largely depreciated their historic, sunk costs, expansion would be capital intensive. Thus, pipeline capacity is generally fixed capacity.

Accidents have a special role in networks such as these. Because of the demanding physical nature of the network, they are prone to happen. Because of the volatile nature of the commodity, accidents tend to be severe. Because of the integrated nature of the network and demanding real time performance, accidents are highly disruptive and difficult to fix.

One critically important effect of these physical and economic characteristics is to render the supply-side of the market inelastic.<sup>25</sup> By this term, economists mean that as prices increase (or decrease) supply does not increase (or decrease) very much. The elasticity is measured in terms of percentage changes. For example, if a ten percent increase in price results in a 20 percent increase in demand, the price elasticity of supply is said to equal 2 (20%/10%). When the elasticity is greater than 1, demand is said to be elastic. Alternatively, if a 10 percent increase in price results in a 2 percent increase in supply, the elasticity of is said to be .2, and this is considered inelastic.

Given the basic infrastructure of supply in the industry, the availability of stocks to meet changes in demand is the critical factor in determining the flexibility of supply. Under all circumstances, since output is slow to respond to price changes because of its inelasticity, stockpiles, storage and importation of product become a critical element of the gasoline market.<sup>26</sup> Stocks are the key factor in policy responses to market power where supply is inelastic.<sup>27</sup>

<sup>25</sup> Considine, Timothy J. and Eunhyeong Heo, "Price and Inventory Dynamics in Petroleum Product Markets," *Energy Economics*, 22 (2000), p. 527, conclude "supply curves for the industry are inelastic and upward sloping." See also "Separability, Functional Form and Regulatory Policy In Models of Interfuel Substitution," *Energy Economics*, 1989.

<sup>26</sup> Considine, Timothy J., "Inventories Under Joint Production: An Empirical Analysis of Petroleum Refining," *Review of Economics and Statistics*, 1997, p. 527, "high inventory levels depress prices... In some cases, imports of product are more variable than production or inventories.

<sup>27</sup> Pirrong, Stephen Craig, *The Economics, Law and Public Policy of Market Power Manipulation* (Kluwer, Boston, MA, 1996), pp. 10... 24... 59.

Economic frictions (including transportation, storage, and search costs) which impede the transfer of the underlying commodity among different parties separated in space or time can create the conditions that the large trade can exploit in order to cause a supracompetitive price...

Although the formal analysis examines transportation costs as the source of friction, the consumption distortion results suggest that any friction that makes it costly to return a commodity to its original owners (such as storage costs or search costs) may facilitate manipulation.

Every investigation of every product price spike in the past several years points to 'unusually low stock' as a primary driver of price shocks. The issue is so fundamental and the theme so often repeated, it is worth reviewing the track record of the past half-decade to drive the message home.

The U.S. Department of Energy identified "lower than normal gasoline stocks" in a chapter entitled "Spring '96 Gasoline Price Runup,"<sup>28</sup> and gave stocks an even more prominent role in a chapter entitled "Petroleum Stocks: Causes and Effects of Lower Inventories" noting that

stocks are needed to keep petroleum supplies moving smoothly from wellhead to end-users. As an immediate source of supply, stocks provide a cushion against normal and unexpected demand and supply fluctuations. Crude oil, distillate, and total gasoline stocks dropped in 1995 and reached new lows in 1996, drawing attention to the long-term downward trend.<sup>29</sup>

Again, the U.S. Department of Energy remarks on the role of stocks in the 1997 price runup as follows:

Gasoline stocks plummeted, dropping 15 million barrels, compared to an average monthly decline (for the 1992-1996 period) of 4 million barrels. Stocks ended the month at near-record low levels. Gasoline suppliers were left facing August, which is usually the highest demand month of the year, with virtually no inventory.<sup>30</sup>

In analyzing the Midwest price spike of 2000, the Department of Energy again found stocks to be the culprit, starting an analysis entitled *Supply of Chicago/Milwaukee Gasoline Spring 2000* as follows:

This summer's run-up in Midwest Gasoline prices, like other recent price spikes, stemmed from a number of factors. The stage was set for gasoline volatility as a result of tight crude oil supplies, which led to low product stocks and relatively high crude oil prices. With little stock cushion to absorb unexpected events, Midwest gasoline prices surged when a number of supply problems developed,

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The extent of market power depends on supply and demand conditions, seasonal factors, and transport costs. These transport cost related frictions are likely to be important in many markets, including grains, non-precious metals, and petroleum products.

Transportation costs are an example of an economic friction that isolates geographically dispersed consumers. The results therefore suggest that any form of transactions costs that impedes the transfer of a commodity among consumers can make manipulation possible...

All else equal, the lower the storage costs for a commodity, the more elastic its demand.

See also, William Jeffrey and Brian Wright, *Storage and Commodity Markets* (1991); Deaton Angus and Guy Laroque, "On the Behavior of Commodity Prices," *Review of Economics and Statistics* 1992.

<sup>28</sup> Energy Information Administration, *Petroleum 1996: Issues and Trends*, September 1997, p. 27.

<sup>29</sup> *Id.*, p. 85.

<sup>30</sup> Energy Information Administration, *Assessment of Summer 1997*, p. 5.

including pipeline and refinery supply problems, and an unexpectedly difficult transition to summer-grade Phase II reformulated gasoline.<sup>31</sup>

Finally, in explaining the early spring price runup in 2001, inventories were the starting point (p. 1): "Low petroleum inventories set the stage for our current situation, as they did last year both for heating oil and for gasoline."<sup>32</sup>

### C. FUNDAMENTALS OF GASOLINE DEMAND

The continuous flow of large quantities of product to meet highly seasonal demand is the central characteristic of the demand side of the market. Many discussions of the gasoline market start from the premise that people drive a lot, perhaps too much. But in order to design proper policies to deal with gasoline demand and how it affects the market, we must have an appreciation for why people drive as much as they do. Examining price and income elasticities leads to the conclusion that energy is a necessity of daily life. Recognizing this fact leads to policy choices that can have the greatest impact while imposing the least cost and inconvenience on consumers.

Gasoline consumption is determined by the physical and economic structure of daily life. People need to drive on a daily basis because of the way our communities are built and our transportation systems designed. Stores are far from homes. Homes are far from work. Social and after-school activities are dispersed. In most communities, mass transit is scarce and inconvenient. It is necessary to drive to get from here to there. We own more cars and drive more miles on a household basis over time. These trends and patterns have become stronger and more deeply entrenched as our society has become wealthier and the tendency for two-earner households has grown. For the past three decades there has been an almost a perfect, one-to-one correspondence between economic growth and the growth of total miles driven.<sup>33</sup>

The result of the underlying socioeconomic determinants of automobile travel is to render demand "inelastic." The demand elasticity for gasoline has been studied hundreds of times in the U.S. and abroad. The best estimate of short-term elasticity (usually measured by

<sup>31</sup> Joanne Shore, Petroleum Division. The FTC reached a similar conclusion in its Midwest Gasoline Price Investigation, at note 23.

<sup>32</sup> "Statement of John Cook, Director, Petroleum Division, U.S. Department of Energy, *Subcommittee on Energy and Air Quality, Committee on Energy and Commerce, U.S. House of Representatives*, May 15, 2001, p.1.

<sup>33</sup> *National Energy Policy*, p. 3-13.

demand response in a period of about a year) is .2.<sup>34</sup> The best estimate of the long-term elasticity is about .4.<sup>35</sup> Both of these are quite low.

The low elasticity of demand is the critical factor in rendering the gasoline market volatile and vulnerable to abuse.<sup>36</sup> When demand is inelastic, consumers are vulnerable to price increases, since they cannot cut back on or find substitutes for their use of the commodity. When the most important market force in disciplining market power, demand elasticity, is as low as observed for gasoline, there are many opportunities to exercise market power.

Because automobiles and driving are necessities, not luxury goods, people buy a certain amount to meet their daily needs, but they do not consume much more beyond meeting those needs.<sup>37</sup> As a result, everyone buys a basic amount of energy, but the amount grows more

<sup>34</sup> Espey, Molly, "Gasoline Demand Revisited: An International Meta-Analysis of Elasticities," *Energy Economics* 20 (1998), 273-295, identifies 363 estimates of short-term elasticity. The median is -.23 for the short term and -.43 for the long term. Kayser, Hilke, A., "Gasoline Demand and Car Choice: Estimating Gasoline Demand Using Household Information," *Energy Economics* 22 (2000), estimated the short term elasticity in the U.S. at -.23. Puller, Steven L. and Loma A. Greening, "Household Adjustment to Gasoline Price Change: An Analysis Using 9 years of US Survey Data," *Energy Economics* 21 (1999) 37-52, find a one-year price elasticity of -.34, but model a more complex structure of responses within shorter periods. They find a larger elasticity of miles traveled in the first quarter after a price shock (-.69 to -.76), but that demand "snaps back." The larger reduction in miles driven is still, "inelastic." Moreover, the reduction in miles driven is larger than the reduction in fuel consumed since it appears that households cut back on the most efficient driving miles (i.e. higher speed vacation miles).

<sup>35</sup> Espey, Molly, "Explaining the Variation in Elasticity Estimates of Gasoline Demand in the United States: A Meta-analysis," *The Energy Journal*, 17, 1996, Table 2, shows the average elasticity of demand for U.S. only studies at -.42.

<sup>36</sup> Landes and Posner point out that when demand elasticities are low, market power becomes a substantial problem. In their words, Lerner Index "comes apart."

[T]he formula "comes apart" when the elasticity of demand is 1 or less. The intuitive reason is that a profit-maximizing firm would not sell in the inelastic region of its demand curve, because it could increase its revenues by raising price and reducing quantity. Suppose, for example, that the elasticity of demand were .5. This would mean that if the firm raised its price by one percent, the quantity demanded of its product would fall by only one-half of one percent. Thus its total revenues would be higher, but its total costs would be lower because it would be making fewer units of its product.

Raising price in these circumstances necessarily increases the firm's profits, and this is true as long as the firm is in the inelastic region of its demand curve, where the elasticity of demand is less than 1.

If the formula comes apart when the elasticity of demand facing the firm is 1 or less, it yields surprising results when the elasticity of demand is just a little greater than 1. For example, if the elasticity of demand is 1.01, equation (1a) implies that the firm's price will be 101 times its marginal cost. There is a simple explanation: a firm will produce where its demand elasticity is close to one only if its marginal cost is close to zero, and hence a relatively low price will generate a large proportional deviation of price from marginal cost.

<sup>37</sup> Hsing, Yu, "On the Variable Elasticity of the Demand for Gasoline: The Case of the U.S.A.," *Energy Economics*, April 1990, p. 134, notes that the income elasticity declines over time and draws an analogy with expenditures on food,

The declining income elasticity in the long-run indicates that the proportion of income spent on gasoline continues to decline as income rises. This is because the demand for gasoline like many food commodities has its limit beyond which saturation is reached.

slowly than income. The implications of this pattern of consumption are that expenditures on gasoline tend to take a larger share of the income of lower income households.

Economists talk about this as the income elasticity of demand. They measure the income elasticity as the percentage change in consumption compared to the percentage change in income. If a ten percent increase in income leads to 5 percent change in demand for gasoline, it is said to have an income elasticity of demand of .5 and to be inelastic. The studies of gasoline find that its income elasticity is in the range of .5 to .8.<sup>28</sup>

The price and income elasticities described above are typical of necessities. Because the price elasticity is low, consumers have difficulty substituting for this commodity when its price increases. Yet, because the income elasticity is high relative to the price elasticity, the price increase will take a relatively large share of income. This indicates a large decrease in consumer welfare with the price increases.<sup>29</sup>

When the price of a necessity goes up, lower income people suffer a large loss in their well-being. Because gasoline is a necessity, it becomes more and more difficult to reduce consumption as income declines. That is, poorer households will try to spend less for this

<sup>28</sup> Espey, "Gasoline," finds .39 for the short term and .8 for the long term for the wide range of studies. For U.S. specific studies Espey, "Explaining," find .62. Hike finds .5 for the U.S. for the short term, as do Dahl, C.A. and T. Sterner, "Analyzing Gasoline Demand Elasticities: A Survey," *Energy Economics* 13 (1991) 203-310.

<sup>29</sup> Lester Taylor, *Telecommunications Demand: A Survey and Critique* (Cambridge Massachusetts: MIT press, 1980), p. 82), describes another necessity, telephone service, as follows:

When substitution effects are large relative to income effects, consumers can substitute away from goods whose prices have risen with little loss in utility. However, when income effects are large relative to substitution effects, an increase in price means a relatively large decrease in utility...since the income effect is indicated to be large relative to the substitution effect in the price elasticity of demand...the welfare of these households may be significantly decreased by increase in the price.

A similar discussion for energy that revolves around the difficulty of cutting back on energy consumption in the short term is provided by Hunt, Lester and Neil Manning, "Energy Price and Income Elasticities of Demand: Some Estimates for the UK Using the Cointegration Procedure," *Scottish Journal of Political Economy*, May 1989, pp. 189-190.

Our results suggest the long-run income-elasticity of energy demand is around .4 and .5, whereas the short-run (impact) income elasticity is around .6 to .8. The effect of a change in income on energy demand is, therefore, greater in the short-run than in the long run. This may follow from the inflexibility of firms' and households' energy-using capital and appliance stocks in the short-run; an increase in income will, therefore bring about an immediate decrease in the derived demand for energy in the short-term, but this derived demand is reduced in the longer term as more energy efficient machines are installed.

The long-run price elasticity of energy demand estimate is approximately -.3 and the short-run (impact) elasticity approximately -.1. Therefore, the effect of a change in the real price of energy is less in the short-run than in the long-run which is in contrast to the above case for income changes. This may also reflect the fixed nature of the machine and appliance stocks in that a rise in the real price of energy produces a modest fall in energy consumption in the short-term. Energy consumption falls further in the longer-term, however, as the price increase induces the installation of more energy efficient domestic appliances and capital goods.

Note that in this discussion, as in the case of U.S. data, the long run elasticity of demand with respect to income is about twice the long run elasticity of demand with respect to price, satisfying the fundamental condition for a necessity as described by Taylor, but both are inelastic.

commodity at lower levels of income, but they find it more and more difficult to do so because it is a necessity. As a result, as described in Figure 2 in the introduction, at each lower level of income, expenditures for this commodity rise as a percentage of income, although they fall in absolute value. Households are forced to spend a larger share of their income on telephone service to maintain their well-being.

People drive a substantial amount because they have to and a substantial amount more if they can afford to. Income and place of residence are prominent variables influencing gasoline consumption.<sup>40</sup> To gain a perspective on the magnitude of the impact of place of residence and income on gasoline consumption we note that approximately 79 percent of households that live in center cities have vehicles, compared to 92 percent of households that live in suburbs and rural areas. Approximately 67 percent of all households eligible for federal assistance have a vehicle. In contrast over 98 percent of all households with incomes above \$50,000 have a vehicle.

Even among households that have a vehicle, we observe substantial differences in consumption across place of residence and income. Households that have vehicles in rural and suburban areas use considerably more gasoline than those in central cities. Figure 3 contrasts data on gasoline consumption by households that reside in center cities to those that reside in the suburbs and rural areas. It presents data for households that own vehicles across income levels.

Those who reside in rural and suburban areas drive more than those who live in center cities. The difference is larger for upper income households than for lower income households. Households eligible for federal assistance who reside in suburban or rural areas consume over 20 percent more gasoline than households eligible for federal assistance who reside in center cities. Households with income above \$50,000 per year who reside in the suburbs or rural areas consume over 40 percent more gasoline than their counterparts who reside in center cities. Upper income households who live in rural areas consume over twice as much gasoline as lower income households who live in center cities. When vehicle ownership is factored in, the difference in consumption between rural upper income and urban lower income households would be a factor of three.

#### **D. A TIGHTENING MARKET**

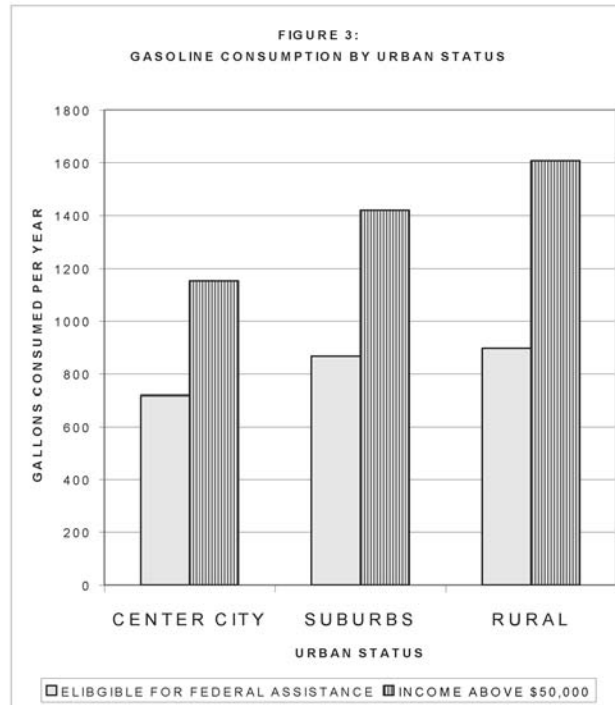
##### **1. Increases in Gasoline Demand**

Understanding the nature of demand for gasoline is critical for developing policy to influence consumption. For policy purposes, not all of the factors that affect demand are accessible or relevant. The growth in the adult population, which propels the growth in the number of vehicles, is not something we would or could change, even though the number of drivers and cars increased by about 10 percent over the past decade.<sup>41</sup> Slowing income

<sup>40</sup> Greening, Loma, et al., "Use of Region, Life Cycle and Role Variables in the Short-Run Estimation of the Demand for Gasoline and Miles Traveled," *Applied Economics*, 27, 1995, review a number of variables that affect driving and gasoline consumption. The income and region variables are important in all cases, as are two earner families.

<sup>41</sup> *Statistical Abstract of the United States: 2001*, Table 1026;





Source: U.S. Department of Energy, *Household Vehicle Energy Consumption: 1994*, Table 5.9

growth just to reduce gasoline consumption is not a likely candidate, even though that influenced the number of miles and the types of cars driven.<sup>42</sup>

It is the behavior of the population, given its size and wealth on which policy focuses. While the pattern of daily life determines the number of miles driven, the quality of the vehicle fleet determines the number of gallons consumed to cover those miles (see Table 1). The types of cars chosen and efficiency of the vehicles combine to determine gas mileage. Once the community is laid out and the car is chosen, the ability to change the amount of gasoline consumed is limited, without suffering deprivation.<sup>43</sup>

Table 1 presents the key drivers of gasoline consumption over the past two decades, the number of vehicles, the mileage per vehicle and the fuel efficiency of the vehicles. Total gasoline consumption grew by about 1.5 percent per year in the 1990s. This increase reflected the combination of increasing miles driven, a shift from cars to light trucks, which includes SUVs and changes in the fuel efficiency of the vehicle fleet.

TABLE 1: GROWTH IN POLICY RELEVANT FACTORS AFFECTING GASOLINE CONSUMPTION

	COMPOUND ANNUAL CHANGE	
	1990s	1980s
TOTAL GASOLINE CONSUMPTION	1.5%	1.0%
VEHICLES REGISTERED		
CARS	0	.9
LIGHT TRUCKS	8.9	5.1
VEHICLE USAGE (MILES PER VEHICLE)		
CARS	1.3	1.7
LIGHT TRUCKS	0	1.3
FUEL EFFICIENCY (MILES PER GALLON, MPG)		
CARS	.6	2.4
LIGHT TRUCKS	.7	2.8

Sources and notes: Average annual changes are presented because the length of the period for which data is available differs between the two decades. For the 1980s, the data is 1980 to 1990. For the 1990s, the data is 1990 to 1999. U. S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 1.10; 3.4; U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, various issues, Motor Vehicle Registrations; U.S. Federal Highway Administration, *Highway Statistics: Light Trucks*.

<sup>42</sup> *Monthly Energy Review: December 2000*, Table 10.1; *Statistical Abstract*, Table 1049; *National Energy Policy*, p. 3-13.

<sup>43</sup> Telling people not to do things means they are being deprived. Giving them alternative ways to do them (including changing modes of transportation or using more fuel efficient cars, which usually entails using more capital and less fuel) is a substitution. *Webster's Third New International Dictionary, Unabridged* (Springfield, MA, 1986) defines a substitute as "something that is put in the place of something else or is available for use instead of something else." This is in contrast to the definition of deprivation, "to take away, to take something away from."

The increase in gasoline consumption per vehicle can be decomposed into the increase in mileage and the change in vehicle type. Mileage accounts for about three quarters of the increase. One quarter of the increase was caused by the shift to SUVs.

While the shift to SUVs was one striking feature of the 1990s, an equally striking and more important feature of the demand side was the failure of fuel efficiency to improve. Fuel economy improvements did not keep up. Between 1973 and 1979 (the first two energy price shocks caused by the 1973 Arab-Israel war and the subsequent Arab oil embargo and the Iranian Revolution) average fuel efficiency increased by just under 1 percent per year. Between 1979 and 1990-911 (The Iraqi invasion of Kuwait) average fuel efficiency increased by 2.5 percent per year (see Figure 4). Since 1991 there has been virtually no improvement in fuel efficiency.

If the fuel efficiency of autos had increased as rapidly in the 1990s as it did in the 1980s, autos would have been 20 percent more efficient, getting about 4 miles per gallon more, in 2000. If there had not been a shift to SUVs, the average fleet efficiency would have been about 1 mile per gallon higher.<sup>44</sup>

## 2. The Failure of Supply-side Capacity to Expand

Supply-side production capacity has not increased as fast as demand. Consequently, over the past decade and a half, all elements of the supply-side have become constrained relative to demand.

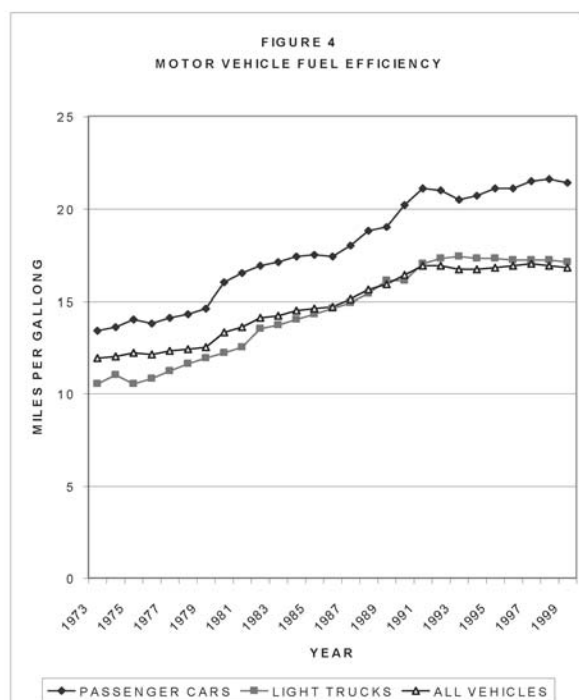
Refinery capacity has not expanded to keep up with the growth in demand. Figure 5 shows the relationship between refinery output and demand. In 1985 refinery capacity equaled daily consumption of petroleum products but by 2000, daily consumption exceeded refinery capacity by almost 20 percent. As discussed in the next Chapter, the decline in refinery capacity is partly the result of consolidation in the industry.

Figure 6 shows the relationship between stocks and demand for gasoline. Stocks are measured as the number of days of demand for gasoline in storage. It shows both total stocks and the amount of stock above what is considered the lower operational inventory. Because of the nature of operations of gasoline delivery systems, a certain level of stock is needed to keep the system running in real time.<sup>45</sup> Operations are subject to disruption should stocks fall

<sup>44</sup> Greene, David, L. "Why CAFÉ Worked," *Energy Policy*, 26 (1998), p. 602, concludes this was the impact in the period 1975-1996.

<sup>45</sup> U.S. Department of Energy, Energy Information Administration, *Petroleum Supply Monthly*, April 2000, p. 145, defines the lower operational inventory as follows.

Lower operational inventory (LOI): The lower operational inventory is the lower end of the demonstrated operational inventory range updated for known and definable changes in the petroleum delivery system. While not implying shortages, operational problems or price increases, the LOI is indicative of a situation where inventory-related supply flexibility could be constrained or non-existent. The significance of these constraints depends on local refinery capability to meet demand and the availability and deliverability of products from other regions or foreign sources.

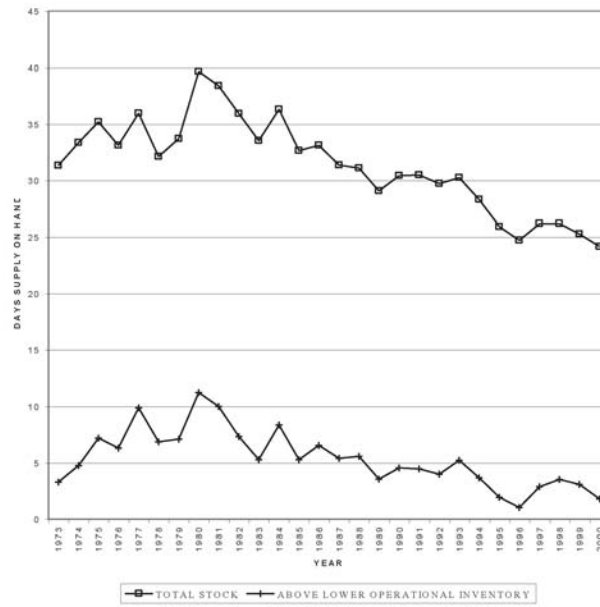


Source: U. S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 1.10.



Source: U.S. Department of Energy, Energy Information Administration, *Petroleum Supply Annual*, various issues, Tables S1, 36.

FIGURE 6: GASOLINE STOCKS



SOURCE: Source: U.S. Department of Energy, Energy Information Administration, *Petroleum Supply Monthly*, various issues, Table, S4, Figure S6.

below this level.<sup>46</sup> Thus, it is stocks above this level that are available to respond to shifts in demand or price.

In recent years, stockpiles have declined dramatically when measured as a percentage of demand. In the early 1980s, stocks on hand would run at 40 days supply during off-peak periods and 35 days supply during the peak period.<sup>47</sup> By the mid-1990s, stocks were running in the range of 30 to 35 days supply. Recently stocks have plunged to a range of 20 to 25 days. More importantly, the reserves above the lower operational inventory levels have declined to very low levels. They generally are in the range of a couple of days, compared to a week or more in the 1980s. As discussed in the next Chapter, this decline in stocks is at least partially the result of consolidation in the industry.<sup>48</sup>

#### D. CONCLUSION

Physical and economic fundamentals set the context for markets, they do not determine market structure, conduct or performance. The current situation has developed over a substantial period of time for a variety of reasons. The recent report of the National Energy Policy Development Group blames environmental and other regulation for the failure to expand refinery and pipeline capacity.<sup>49</sup> The failure to keep stocks up is explained as a derivative of the capacity constraints, since there is never an opportunity to produce product for storage. The inability to move product from one market to the next is attributed to fragmentation of markets because of "boutique" fuels that require specific blends to meet the clean air requirements of individual markets. A close look at the behavior of the gasoline market suggests that that there is a lot more to the problem than that.

### III. MARKET ANALYSIS

#### A. STRUCTURE: BUSINESS DECISIONS THAT MAKE MARKETS TIGHT

##### 1. Reducing Capacity

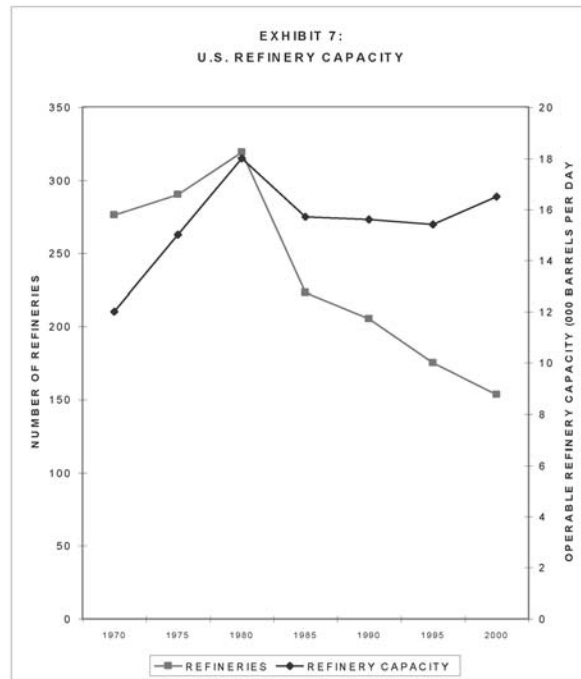
While refinery capacity has been steady over the past two decades, a large number of small refineries have been shut down (see Figure 7). In the early 1980s, a public policy to

<sup>46</sup> The general literature of stock and storage behavior shows that stocks are typically kept to ensure operational flow (see Pyndick, Robert S., "Inventories and the Short-Run Dynamics of Commodity Prices," *Rand Journal of Economics*, Spring 1994; "The Present Value Model of Rational Commodity Pricing," *The Economic Journal*, May 1993; Considine, Inventories. In figure 6, the LOI is placed at 185 million barrels throughout the period, although it may have varied over time. As supplies have become tight, operators may have squeezed the LOI down. With refinery capacity stable over the past ten years, using a constant level for the period on which this paper focuses provides a sound basis for analysis.

<sup>47</sup> *Petroleum 1996: Issues and Trends*, September 1997, p. 90.

<sup>48</sup> NEPDG, p. 7-13, recognizes the existence of the problem, but brushes it aside.

<sup>49</sup> Virtually all of the recommendations dealing with this infrastructure addresses environmental and regulatory matter, see Chapter 7.



Source: U.S. Department of Energy, Energy Information Administration, *Petroleum Supply Annual*, various issues, Tables S1, 36.



support small refineries was terminated. This accounted for the loss of about 100 refineries between 1980 and 1985. Since then, scores of other refineries have been shut down. Government did not close refineries, private businesses did. In the 1990s, alone approximately 50 refineries were closed. In just the past five years over 20 refineries have been shut down.

The complaint that no new refineries have been built in recent years loses its compelling public policy impact.<sup>50</sup> Blaming this on the Clean Air Act misses the point. Consolidation of the refinery industry is a business decision that began long before changes in the Clean Air Act amendments of 1990 and continued after the adjustment to changes in gasoline formulation.

In fact, at the time of the 1995 changes in Clean Air Act requirements the Department of Energy conducted a study of the impact of environmental requirements on the refining industry. It concluded that "pollution abatement operating costs have been and continue to be a small part of overall operating costs."<sup>51</sup> Similarly, general reviews of the industry at the time concluded that "a close examination reveals that the change in refining costs attributable to RFG had no major impact on margin behavior between 1993 and 1995."<sup>52</sup>

Just as with refineries, the decline in storage is attributable in part to a reduction in capacity. Storage capacity declined by over 10 percent in the past half decade.<sup>53</sup> The reduction in capacity equals over ten days' supply, and ten days of working storage capacity. The secular decline in gasoline stocks is a critically important factor in keeping markets tight.<sup>54</sup> The recent National Energy Task force recognized the trend. Government did not choose to carry much lower stocks, private businesses did.<sup>55</sup>

Ongoing industry consolidation, in an effort to improve profitability, inevitably leads to the sale or closure of redundant facilities by the new combined ownership. This has been particularly true of terminal facilities, which can lead to reductions in inventory and system flexibility. While excess capacity may have

<sup>50</sup> NEPG, p. 7-13.

<sup>51</sup> U.S. Department of Energy, Energy Information Administration, *The Impact of Environmental Compliance Costs on U.S. Refining Profitability* (October 1997) p. 3, shows operating costs per gallon associated with pollution abatement at about \$.01 per gallon and large capital costs for a short period of time to meet new requirements, but these had already begun to decline by 1995. The impact of capital expenditures must also be small, in the range of a penny per gallon. Other studies lead to similar estimates of costs associated with pollution abatement of a few cents per gallon, see Nadim, Farahad, et al., "United States Experience with Gasoline Additives," *Energy Policy*, 29 (2001).

<sup>52</sup> U.S. Department of Energy, Energy Information Administration, *Petroleum 1996: Issues and Trends* (September 1997), p. 137.

<sup>53</sup> U.S. Department of Energy, Energy Information Administration, *Petroleum Supply Annual*, Table 44.

<sup>54</sup> Pirrong, p. 70.

This is true because the demand for a storable commodity is a derived demand equal to the sum of the demand curve for immediate consumption and the demand curves for future consumption (net of production and storage costs). The ability of consumers and producers to respond to sudden increases in supplies through storage and the adjustment of future consumption or production decisions (such as, increasing future consumption or reducing future shipments of the commodity to the delivery market) tends to dampen the price response to an increase in supply of a storable commodity.

<sup>55</sup> *Midwest Gasoline Price Investigation*, note 23 citing OECD and DOE documents states "Higher crude prices led producers to draw down inventories in anticipation of replacing them later at lower prices."

deterred some new capacity investments in the past, more recently other factors, such as regulations, have deterred investment.<sup>56</sup>

The prominent role of business decisions in reducing capacity immediately raises the concern that these decisions are intended to reduce competitive market forces and secure market power for major industry players. While mergers and acquisitions or facility closings are justified by claims of efficiency gains,<sup>57</sup> they have a real economic effect of reducing competition. Recently revealed documents from the mid-1990s indicate that industry officials and corporate officers were concerned about how to reduce capacity, with observations like

"if the U.S. petroleum industry doesn't reduce its refining capacity, it will never see any substantial increase in refinery profits," said a Chevron Corporation document in November 1995.

A Texaco official, in a March 1996 memorandum, said refinery overcapacity was "the most critical factor" facing the industry and was responsible for "very poor refining financial results."<sup>58</sup>

## 2. Concentration of Ownership

A wave of mergers in the industry has resulted in a level of concentration that creates the basis for business behaviors and strategies that can exploit market power. Several major mergers between vertically integrated companies in the top tier of the oil industry (Exxon-Mobile, BP-Amoco-Arco, Chevron-Texaco, Phillips-Tosco) have pushed petroleum product markets to levels of concentration that are a serious concern.

The U.S. Department of Justice (DOJ) defines market levels of concentration to determine the extent of review of mergers.<sup>59</sup> DOJ is unlikely to challenge mergers between companies in markets that are in unconcentrated. To make this assessment, it calculates the index of concentration known as the HHI (Herfindahl-Hirschman index).<sup>60</sup> Another way to

<sup>56</sup> NPEG, p. 7-13.

<sup>57</sup> They certainly have value on the stock market (see Edwards, Kenneth John D. Jackson and Henry L. Thompson, "A Note on Vertical Integration and Stock Ratings of Oil Companies in the U.S.," *The Energy Journal* (2000).

<sup>58</sup> "Oil Data Show Industry Role in Shortages a Possibility," *New York Times*, June 15, 2001.

<sup>59</sup> U.S. Department of Justice, *Merger Guidelines*, revised 1997.

<sup>60</sup> Shepherd, p. 389, gives the following formulas for the Herfindahl-Hirschman Index (HHI) and the Concentration Ratio (CR):

$$H = \sum_{i=1}^n S_i^2$$

$$CR = \frac{\sum_{i=1}^m S_i}{m}$$

where

$n$  = the number of firms

$m$  = the market share of the largest firms (4 for the 4 firm concentration ratio)

$S_i$  = the share of the  $i$ th firm.

quantify market concentration is to calculate the market share of the largest 4 firms (4 firm concentration ratio or CR4).

Under Merger Guidelines issued early in Ronald Reagan's first term, the DOJ considers a market with an HHI of 1000 or less to be unconcentrated. Such a market would have the equivalent of ten equal sized competitors. In such a market, the 4-firm concentration ratio would be 40 percent (see Table 2). Any market with a concentration above this level was deemed to be a source of concern and increases in concentration through mergers would receive scrutiny.

TABLE 2: DESCRIBING MARKET CONCENTRATION FOR PURPOSES OF PUBLIC POLICY

DEPARTMENT OF JUSTICE MERGER GUIDELINES	EQUIVALENTS IN TERMS OF EQUAL SIZED FIRMS	HHI	4-FIRM SHARE
↑ HIGHLY CONCENTRATED	5 EQUAL SIZED FIRMS	HHI= 2000	CR4=80
		HHI= 1800 OR MORE	
	6 EQUAL SIZED FIRMS	HHI= 1667	CR4=67
↓ UNCONCENTRATED	10 EQUAL SIZED FIRMS	HHI= 1000	CR4=40

Sources: U.S. Department of Justice, *Horizontal Merger Guidelines*, revised April 8, 1997, for a discussion of the HHI thresholds; Shepherd, William, G., *The Economics of Industrial Organization* (Prentice Hall, Engelwood Cliffs, N.J., 1985), for a discussion of 4 firm concentration ratios.

The DOJ considers a market with an HHI of 1800 as the point where a market is considered highly concentrated. In terms of equal sized competitors, this level falls between five and six. A market with six equal sized competitors would have an HHI of 1667. In such a market, the four firm concentration ratio would be 67. A market with five equal sized competitors would have an HHI of 2000. The four firm concentration ratio would be 80 percent.

Shepherd describes these thresholds in terms of four-firm concentration ratios as follows:<sup>61</sup>

<sup>61</sup> Shepherd, p. 4.

Tight Oligopoly: The leading four firms combined have 60-100 percent of the market; collusion among them is relatively easy.

Loose Oligopoly: The leading four firms, combined, have 40 percent or less of the market; collusion among them to fix prices is virtually impossible.

Shepherd refers to collusion, but that is not the only concern of is not the only concern of market power analysis, or the Merger Guidelines. The Merger Guidelines of the Department of Justice recognize that market power can be exercised with coordinated, or parallel activities and even unilateral actions.

Market power to a seller is the ability profitably to maintain prices above competitive levels for a significant period of time.<sup>62</sup> In some circumstances, a sole seller (a "monopolist") of a product with no good substitutes can maintain a selling price that is above the level that would prevail if the market were competitive. Similarly, in some circumstances, where only a few firms account for most of the sales of a product, those firms can exercise market power, perhaps even approximating the performance of a monopolist, by either explicitly or implicitly coordinating their actions. Circumstances also may permit a single firm, not a monopolist, to exercise market power through unilateral or non-coordinated conduct --conduct the success of which does not rely on the concurrence of other firms in the market or on coordinated responses by those firms. In any case, the result of the exercise of market power is a transfer of wealth from buyers to sellers or a misallocation of resources.

<sup>62</sup>/ Sellers with market power also may lessen competition on dimensions other than price, such as product quality, service or innovation.<sup>62</sup>

<sup>62</sup> Horizontal Merger Guidelines, at section 0.1. Lawrence Sullivan and Warren S. Grimes, *The Law of Antitrust: An Integrated Handbook*, Hornbook Series (West Group, St. Paul, 2000), pp. 596-597, describe the DOJ approach as follows:

The coordination that can produce adverse effects can be either tacit or express. And such coordination need not be unlawful in and of itself. According to the 1992 Guidelines, to coordinate successfully, firms must

(1) reach terms of interaction that are profitable to the firms involved and

(2) be able to detect and punish deviations. The conditions likely to facilitate these two elements are discussed separately, although they frequently overlap.

In discussing how firms might reach terms for profitable coordination, the Guidelines avoid using the term "agreement," probably because no agreement or conspiracy within the meaning of Section 1 of the Sherman Act is necessary for the profitable interaction to occur. As examples of such profitable coordination, the Guidelines list "common price, fixed price differentials, stable market shares, or customer or territorial restrictions." Sometimes the facilitating device may be as simple as a tradition or convention in an industry.

The go on to not the mechanisms that might be used and the usefulness of the HHI index in this regard.

Oligopoly conditions may or may not require collusion that would independently violate Section 1 of the Sherman Act. A supracompetitive price level may be maintained through price leadership (usually the leader is the largest firm), through observance of a well-established trade rule (e.g., a

Because the supply and demand elasticities for gasoline are so low<sup>63</sup> and the expenditures on energy are so large,<sup>64</sup> we believe these industries should be held to close scrutiny. The critical level for scrutiny is the unconcentrated threshold (10 or more equal sized firms)<sup>65</sup> because short-term inelasticity allows sharp increases in price and the size of expenditures on this commodity creates large price impacts and transfers of wealth in short periods of time.

As Table 3 shows, recent mergers have pushed three of the five regional refining markets (Petroleum Administrative Defense Districts of PADD) in the country into a danger zone of concentration. There has clearly been a sharp increase in the level of concentration in all markets except the Mountain West. The East Coast, Mountain West and West Coast all fall well into the concentrated zone. The upper Midwest is close to the upper limit of the unconcentrated zone based on HHI with the four firm concentration ratio moving well above the unconcentrated level.

Product markets are much smaller than refinery markets. That is, while refineries may serve a broad area, most consumers buy virtually all of their gasoline in the metropolitan area in which they live. Most studies of gasoline prices use the metropolitan area as the unit of analysis. While we lack data on a city-by-city basis, some data is readily available on a state-by-

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convention of a 50 percent markup in price among competing retailers), or through strategic discipline of nonconforming members of the industry...

To the extent that one or very few members of a concentrated industry have much higher market shares than other members, the opportunities for strategic disciplining may expand... The expanded ability of the larger firm to coerce price discipline is reflected in the Herfindahl-Hirschman Index (HHI), which will assign a high concentration index to an industry with a very large participant. An industry with the same number of participants, each of them roughly equal in size, will have a lower index.

<sup>63</sup> Landes and Posner (p. 947) stress the importance of adjusting scrutiny based on the market characteristics.

Market Share Alone Is Misleading. -Although the formulation of the Lerner index... provides an economic rationale for inferring market power from market share, it also suggests pitfalls in mechanically using market share data to measure market power. Since market share is only one of three factors... that determine market power, inferences of power from share alone can be misleading. In fact, if market share alone is used to infer power, the market share measure... which is determined without regard to market demand or supply elasticity (separate factors in the equation), will be the wrong measure. The proper measure will attempt to capture the influence of market demand and supply elasticity on market power.

<sup>64</sup> Landes and Posner (p. 954) also argued that the size of the market at issue should be considered, "if very high market shares are required to justify a finding of monopoly power in a small market, then a lower market share should suffice in a large market."

<sup>65</sup> Given the low elasticities it can be argued that even ten equal sized firms may not ensure a workably competitive market. As J. W. Friedman, *Oligopoly Theory* (Cambridge: Cambridge University Press, 1983), pp. 8-9, points out the economic literature would support a much less concentrated market as fully competitive.

Where is the line to be drawn between oligopoly and competition? At what number do we draw the line between few and many? In principle, competition applies when the number of competing firms is infinite; at the same time, the textbooks usually say that a market is competitive if the cross effects between firms are negligible. Up to six firms one has oligopoly, and with fifty firms or more of roughly equal size one has competition; however, for sizes in between it may be difficult to say. The answer is not a matter of principle but rather an empirical matter.

state basis. It confirms that the trend of increasing concentration has brought the industry to a level that is a source of concern.

TABLE 3:  
CONCENTRATION OF REFINERIES IN REGIONAL PETROLEUM MARKETS

PETROLEUM ADMINISTRATIVE DEFENSE DISTRICT (PADD)	1994		2000	
	HHI CR	4-FIRMHHI CR	HHI CR	4-FIRM CR
I. East Coast	1297	62	2007	77
II. Upper Midwest	731	40	980	52
III. Gulf Coast	453	29	753	42
IV. Mountain West	1000	49	1061	51
V. West Coast	1037	54	1376	67

Source: U.S. Department of Energy, Energy Information Administration, *Petroleum Supply Annual 1999*, Volume 1 (June 2000); Table 38 for market shares, p. 122 for PADDs. The states in each PADD are as follows I = ME, NH, VT, MA, RI, CT, NY, NJ, PA, WV, DE, MD, VA, NC, SC, GA, FL; II = OH, MI, IN, KY, TN, IL, WI, MN, IA, MO, OK, KS, MB, SD, ND, III = AL, MI, AK, LA, TX, NM; IV = MT, WY, CO, UT, ID; V = WA, OR, NV, AZ, CA, HI AK.

Notes: HHI = Hirschman Herfindahl Index (market shares of all firms squared and summed);  
4-Firm CR = Four Firm Concentration Ratio (market share of the four largest firms)

Table 4 presents several analyses of the concentration of gasoline distribution at the state level. We have prepared analyses of California, Illinois, Wisconsin and Connecticut based on the number of branded gasoline stations in each state. We have selected a time frame similar to that of the prior refinery analysis. California was selected since the West is frequently mentioned in discussions of high gasoline prices. There was also a U.S. Department of Energy study available for comparison. Illinois and Wisconsin were selected because they have been focal points of concern in recent price spikes. Connecticut is included since it represents another PADD and there was a separate analysis available for comparison.

We observe sharp increases in concentration in each of these states. Each is now well into a range of concentration that is a source of concern for competitiveness. The level of concentration we estimate on the basis of outlets is consistent with the other analyses that are based on volumes of sales. The trend of increasing concentration is observable in all cases.

TABLE 4:  
CONCENTRATION OF GASOLINE DISTRIBUTION IN STATE MARKETS

<u>CALIFORNIA</u>						
CFA-Outlets	1994 HHI	4-Firm CR	5-Firm CR		1999 HHI	4-Firm CR 5-Firm CR
	1143	60	69	→	1432	73 90
DOE Reformulated Volume				1997 HHI 5-Firm CR		
				1290 74		
<u>CONNECTICUT</u>						
CFA-Outlets	1994 HHI	4-Firm CR			1999 HHI	4-Firm CR
	1022	53		→	1415	65
Lundberg Total Volume				1998 HHI 4-Firm CR	1999 HHI	4-Firm CR
				1110 55	1264	62
<u>ILLINOIS</u>						
CFA-Outlets	1994 HHI	4-Firm CR			1999 HHI	4-Firm CR
	1053	55		→	1311	63
<u>WISCONSIN</u>						
CFA-Outlets	1994 HHI	4-Firm CR			1999 HHI	4-Firm CR
	1175	65		→	1400	66

SOURCES: CFA, calculated from *National Petroleum News*, Annual Survey of Outlets; Lundberg, *Connecticut of Market Report*, February, 1999; DOE, U.S. Department of Energy, Energy Information Administration, *Assessment of Summer 1997 Motor Gasoline Price Increase*, May 1998, p. 64

### 3. Vertical Integration

The previous discussion focuses on horizontal concentration. Vertical integration between the segments of the industry may have an impact as well. Vertical integration by dominant firms may create a barrier to entry requiring entry at two stages of production,<sup>66</sup> or foreclosing critical inputs for competitors in downstream markets.<sup>67</sup> Vertical arrangements may restrict the ability of downstream operators to respond to local market conditions,<sup>68</sup>

Vertical integration not only removes important potential competitors across stages of production,<sup>69</sup> but also may trigger a wave of integrative mergers,<sup>70</sup> rendering small independents at any stage extremely vulnerable to a variety of attacks.<sup>71</sup>

<sup>66</sup> Scherer and Ross, p. 526, formulate the issue as follows "To avoid these hazards, firms entering either of the markets in question might feel compelled to enter both, increasing the amount of capital investment required for entry.

<sup>67</sup> Shepherd, pp. 289-290, describes this issue as follows:

When all production at a level of an industry is "in-house," no market at all exists from which independent firms can buy inputs. If they face impediments or delays in setting up a new supplier, competition at their level will be reduced. The clearest form of this is the rise in capital a new entrant needs to set up at both levels.

Ores, special locations, or other indispensable inputs may be held by the integrated firm and withheld from others. The integration prevents the inputs from being offered in a market, and so outsiders are excluded. A rational integrated firm might choose to sell them at a sufficiently high price.

<sup>68</sup> Shepherd, p. 294, argues that integration by large firms creates this problem. Restrictions may be set on areas, prices or other dimension ... Only when they are done by small-share firms may competition be increased. When done by leading firms with market shares above 20 percent, the restrictions do *reduce* competition.

<sup>69</sup> Perry, Martin K., "Vertical Integration: Determinants and Effects," Richard Schmalensee and Robert D. Willig, *Handbook of Industrial Organization* (Amsterdam, North Holland: 1989), p. 197.

Potential competition may be important for some markets. If one such potential entrant merges with a firm already inside the market, the ranks of actual plus potential competitors are reduced by one. Unless the entrant is in a vertical relation, the conglomerate reduces the total degree of competitive constraint, even if only slightly.

In addition, [Bain] pointed out that vertical merger also eliminated one of the most natural potential entrants into each stage. Indeed, these two theories are complements. It is difficult to argue that firms in neighboring stages are the most likely entrants without also believing that entry at both stages is more difficult than entry at one stage.

<sup>70</sup> Perry, p. 247.

The first firms to integrate into neighboring stages reduce the number of alternative sources for other firms at either stage. This "thinning" of the market can increase the costs of market or contractual exchange. Subsequent integration by other firms then becomes more likely.

<sup>71</sup> Scherer and Ross, pp. 526-527.

It is possible that business firms undertake vertical integration mergers not to enhance the level of monopoly power at some stage, but to redistribute it. Oligopolies often settle down into behavioral patterns in which price competition atrophies, even though some or all sellers suffer from excess capacity. Non-price rivalry then becomes crucial to the distribution of sales. One form of nonprice competition is the acquisition of downstream enterprises which, all else (such as prices) being equal, will purchase from their upstream affiliates. If acquisition of this sort deflects significant amounts of sales, disadvantaged rivals are apt to acquire other potential customers in self-defense,



Gasoline markets are vulnerable to these negative effects of vertical integration. Product must move downstream from the refinery or the tanker to the pump. Vertically integrated operations are closed to independent sources of supply. They may impose zonal pricing formulas or restrictions of sources of supply on their distribution outlets.<sup>72</sup>

With vertical integration the market may be less responsive than it could be both in the short term, since competing product has difficulty getting into individual markets at the end of a vertically<sup>73</sup> integrated chain and in the long term because new competitors in any market may have to enter at several stages of the business. The FTC found this to have had a substantial impact on the market in its study of the Midwestern gasoline market.

A significant part of the reduction in the supply of RFG was caused by the investment decisions of three firms. When determining how they would comply with the stricter EPA regulations for summer-grade RFG that took effect in the spring 2000, three Midwest refiners each independently concluded it was most profitable to limit capital expenditures to upgrade their refineries only to the extent necessary to supply their branded gas stations and contractual obligations. As a result of these decisions, these three firms produced, in the aggregate, 23 percent less summer -grade RFG during the second quarter of 2000 than in 1999. Consequently, these three firms were able to satisfy only the needs of their branded gas stations and their contractual obligations, and could not produce summer -grade RFG to sell on the spot market as they had done in prior years.<sup>74</sup>

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and reciprocal fear of foreclosure precipitates a bandwagon effect in which the remaining independent downstream enterprises are feverishly sought.

Shepherd, p. 290.

Triggering: If there are 10 nonintegrated firms and only one of them integrates, then little affect on competition might occur. But if this action induces the other 9 to do the same, the ultimate impact of the first "triggering" move may be large. Any increase in market power is magnified.

<sup>72</sup> Borenstein, Severin, A. Colin Cameron and Richard Gilbert, "Do Gasoline Prices Respond Asymmetrically to Crude Oil Price Changes, *Quarterly Journal of Economics*, 1997.

<sup>73</sup> Scherer and Ross, pp. 526-527.

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<sup>74</sup> FTC, *Midwest Gasoline Price Investigation*, p. 4.

The past half-decade has certainly experienced a merger wave of vertically integrated firms including Exxon-Mobile, BP-Amoco-Arco, Chevron-Texaco, and Phillips-Tosco.<sup>75</sup> The dominant firms spend an immense amount of their capital on mergers and acquisitions.<sup>76</sup>

#### **B. CONDUCT: EXPLOITING TIGHT MARKETS**

The tightening of supply reflects private business decisions in other ways. As suggested by the Federal Trade Commission report, individual companies now may have pricing power, not through collusion but through individual action.<sup>77</sup> That is, with supply and demand tight and a small number of suppliers in each market, individual suppliers recognize that they can influence the price, at least for short periods of time, by withholding supplies. They are no longer the price takers we find in competitive markets; they become price makers in oligopolistic markets.

In addition, at least one firm increased its summer-grade RFG production substantially and, as a result, had excess supplies of RFG available and had additional capacity to produce even more RFG at the time of the price spike. It thus found itself with considerable market power in the short term. This firm did sell off some inventoried RFG, but acknowledged that it limited the magnitude of its response because it recognized that increasing supply to the market would push down prices and thereby reduce the profitability of its overall RFG sales.<sup>78</sup>

In recent years, imports have begun to fill the gap as prices increase. However, The price gap that develops before imports increase far exceeds the cost of transportation. As the Department of Energy put it

The gasoline price difference between the United States East coast (New York Harbor) and Rotterdam was in the 0-4 cents per-gallon range from 1991 to 1994, but it has been in the 3-8 cents per gallon range since. Since transportation costs are in the 3-5 cents-per-gallon range, Europe to United States movements are economically attractive. Gasoline from the Middle East (particularly Saudi Arabia) has been finding its way to U.S. markets because Asian refining growth has impacted the need and economics for gasoline imports. Finally, any strength in U.S. gasoline markets attracts some increases in

<sup>75</sup> U.S. Department of Energy, Energy Information Administration, *Performance Profiles of Major Energy Producers: 1999*, p. 19, notes the first two mega-mergers – Exxon-Mobile and BP-Amoco. This was followed by the Chevron-Texaco merger.

<sup>76</sup> *Id.*, p. 15, shows that even excluding mega-mergers like Exxon-Mobil, mergers and acquisitions equal 15 to 25 percent of total additions to investment. Similarly, *Id.* P. 55, remarks on the growth of nonintegrated refiners (p. 55), but recent of the 13 companies noted, at least four (including three of the largest) are either a joint venture of vertically integrated companies or have recently been reintegrated through merger. Joint operating agreements also abound in the industry.

<sup>77</sup> FTC, *Midwest Gasoline Price Investigation*. The West Coast gasoline market has also been the object of repeated complaints about pricing behavior.

<sup>78</sup> FTC, *Midwest Gasoline Price Investigation*, p. 4.

imports from traditional Western hemisphere sources, such as Venezuela, Virgin Islands, and Canada.<sup>79</sup>

In fact, the "strength" in the U.S. market represents a sustained run up of over 20 cents at the pump and over 30 cents in the refiner/marketer share. This is a much larger "price difference" than historically has been the case and raises the question of why didn't gasoline from foreign sources "find their way" to the U.S. sooner to restrain price increases.

Prices run up quickly because of even slight disruptions in the supply demand balance and producers are slow to react because they do not fear that others can bring product to market and steal their business. Consequently, prices are said to be sticky downward.<sup>80</sup> There is a debate about whether gasoline prices change asymmetrically with respect to crude oil prices. The majority of published studies find support for the "rockets and feathers" view.<sup>81</sup> Prices rise like rockets and float down like feathers. The debate centers around whether the price changes in crude oil (up and down) are fully and finally reflected in the pump price. Borenstein and the General Accounting Office find the difference to be a penny or two per gallon.<sup>82</sup>

Finally, in the transmission of price increases from wholesale to retail, we find evidence of asymmetry: retail prices change more quickly in response to wholesale price increases than to wholesale price decreases...

The asymmetry implies that variability in crude oil prices, even if there is no systematic increase or decrease in price, is costly to consumers.<sup>83</sup>

Borenstein offers two explanations that raise the possibility of "short run market power among retailers."<sup>84</sup>

Hypothesis 1. Prices are sticky downward because when input prices fall the old output price offers a natural focal point for oligopolistic sellers...

An oligopolistic coordination equilibrium of the kind described here is consistent with a rapid response of prices to positive cost shocks and a slow response to

<sup>79</sup> U.S. Department of Energy, Energy Information Administration, *Assessment of Summer 1997 Motor Gasoline Price Increase*, May 1998, p. 17.

<sup>80</sup> Energy Information Administration, *Price Changes in the Gasoline Market*, March 1999, reviews several decades of studies with mixed results in the analysis of gasoline price asymmetry – the tendency of prices to increase rapidly, but fall slowly. The report concludes that there is strong evidence of pattern asymmetry (i.e. prices do rise faster than they fall) but not amount asymmetry (eventually they fall back all the way). This is not the majority view, however.

<sup>81</sup> Bacon, Robert W., "Rockets and Feathers: The Asymmetric Speed of Adjustment of UK Retail Gasoline Prices to Cost Changes," *Energy Economics* 1991; Reilly, Barry and Robert Witt, "Petrol Price Asymmetry Revisited," *Energy Economics*, 1998.

<sup>82</sup> Borenstein, Gasoline Prices, p. 322; U.S. General Accounting Office, "Energy Security and Policy: Analysis of the Pricing of Crude Oil and Petroleum Products (Washington, DC, March 1993).

<sup>83</sup> *Id.*, pp. 306.. 322.

<sup>84</sup> *Id.*, p. 305.

negative shocks. The response to costs shocks would be asymmetric because retailers would refrain from cutting prices in response to a negative price shock and would instead rely on prevailing prices as a focal point for oligopolistic coordination. Retailers would not exercise similar restraint after a positive cost shock...

If stations in an area are operating at competitive margins and then the wholesale price of gasoline declines, it seems plausible that each station might maintain its retail price until it sees convincing evidence (in the form of lower sales) that competing stations have lowered price. The sellers are certainly not price takers and the buyers are not completely informed about the price of each seller...

Hypothesis 3: Volatile crude oil prices create a signal-extraction problem for consumers that lowers the expected payoff from search and makes retail outlets less competitive...

This result is consistent with the theoretical work... which demonstrates that consumers may search less when the common input prices of all retailers become variable, causing short-run decreases in the elasticity of demand that each retailer faces. It is also consistent with a model of sticky downward price adjustment in an oligopoly with imperfect monitoring<sup>85</sup>

One fundamental difference between the price spikes of recent years and the "rockets and feathers" debate should be underscored. In the recent circumstances, we are not dealing with crude oil price changes, so the question is not whether refiner/marketer margins "catch up," or whether some of the change in price ends up in the refiner/marketer pockets (bottom line). The recent price spikes have been entirely driven by refiner/marketer margins. Even if margins return to historic levels after the spike, there is no doubt that a net increase in marketer margins has occurred. The question is why? The following example serves to underscore the problem.

The *Wall Street Journal* recently identified the company that "withheld" supplies during the summer 2000 price spike in the Midwest as Marathon oil.<sup>86</sup> Within that market, Marathon "only" has a market share of 16 percent in a market that is just below the cutoff point of the unconcentrated level. It is the number two refiner in that market. Does it have market power?

In the short term, it may well have such power, as the following example shows. Assume a demand elasticity of .2 and a supply elasticity of .5. Assume no collusion between firms. Nevertheless, the unilateral action of such a firm could raise prices by 25 percent in the

<sup>85</sup> Id., p. 324... 328... 335.

<sup>86</sup> "FTC Alleges Marathon Ashland Withheld Gasoline to Increase Profits," June 11, 2001.

short term.<sup>87</sup> Even if this were only applied to refiner/marketer margins, the impact on price would be about \$.05 per gallon. These are exactly the orders of magnitude of price effects at issue in the "rockets and feathers" gasoline price literature. More importantly, if the three dominant firms acted in parallel, as suggested by the above FTC observation on refinery investment decisions, margins could double,<sup>88</sup> which is what has been observed over the past two years. It may not sustain that price increase in the long term, but even \$.05 per gallon even in one-market costs consumers hundreds of millions of dollars.

### C. PERFORMANCE: PROFITING FROM PRICE INCREASES

The first indicator of performance to which economic analysts look for signs of market power is price. We have shown that the run-up in prices cannot be attributed to rising costs of compliance with clean air rules. Nor, as we have pointed out, are they the result of crude oil price changes. Figure 8 presents the same data as Figure 1, except that we overlay each year since 1995 one on top of the other. We start in January 1995, since that was the start of the new reformulated gasoline standard. It shows the remarkable increase in refiner/marketer margins over the past eighteen months.

The second indicator to which economic analysts look for signs of the exercise of market power is profits. The bottom line, literally and figuratively, has been a sharp run up in oil company profits over the same 18-month period (see Table 5).<sup>89</sup>

The profits of the integrated oil companies that dominate the refining sector have hit record highs, measured in terms of return on equity, in the past eighteen months. The price spiral of recent years has resulted in a sharp increase in industry profits. Net income from refining and marketing doubled in 2000, compared to 1999. In the first quarter of 2001, profits increased by almost 75 percent. Overall profits for these companies followed a similar pattern

<sup>87</sup> The formula for estimating the Lerner index is:

$$L = \frac{(P - C)}{P} = \frac{1}{\frac{E_d}{E_d + E_m} + \frac{s}{j} (1 - s)}$$

Under the assumptions specified we arrive at the following estimate

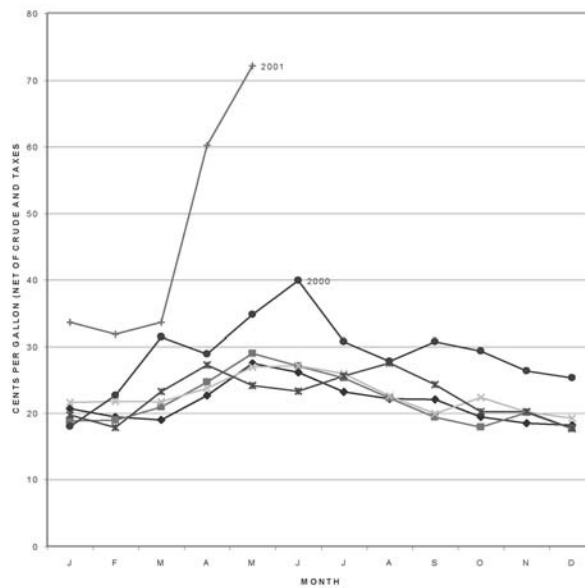
$$\begin{aligned} L &= .16 / (.2 + (.84 * .5)) \\ L &= .5 / .62 \\ L &= .258 \end{aligned}$$

<sup>88</sup> The three firm market share is approximately 50 percent. Therefore,

$$\begin{aligned} L &= .5 / (.2 + (.5 * .5)) \\ L &= .5 / .45 \\ L &= 1.11 \end{aligned}$$

<sup>89</sup> Public Citizen, *Record Oil Company Profits Underscore Market Consolidation*, May 31, 2001; *Fortune* 500, July 18, 2001; *Business Week First Quarter Results*, May 21, 2001

FIGURE 8  
INCREASING REFINER/MARKETER SHARE OF  
GASOLINE PUMP PRICE: 1995-2001



Source: Source: U. S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 9.4, for pump prices; *Petroleum Marketing Monthly*, Table 1 for crude prices and Table 6 for prices net of taxes.

TABLE 5:  
INCREASING PROFITS FOR OIL OPERATIONS

	PERCENT INCREASE IN PROFITS	
	ANNUAL 1999 - 2000	1 <sup>ST</sup> Q 2000 - 2001
MAJORS (9 FIRMS)		
REFINING AND MARKETING	93	71
INTEGRATED OIL (Exploration, production, refining and marketing)	145	76
PETROLEUM REFINING (FORTUNE, 16 FIRMS)	148	
COAL OIL AND GAS (BUSINESS WEEK, 27 FIRMS)		89

Sources: Public Citizen, *Record Oil Company Profits Underscore Market Consolidation*, May 31, 2001; *Fortune 500*, July 18, 2001; *Business Week First Quarter Results*, May 21, 2001.

It should be noted that although 1999 was a slightly below average year, 2000 was an extremely good year. *Fortune* reports return on equity of 25 percent in 2000,<sup>90</sup> while *Business Week* reports 22 percent.<sup>91</sup> This is almost twice the historic average for the industry and about 50 percent more than other large corporations.<sup>92</sup> Thus, even as prices "settle down" to 2000 levels, they are coming to rest at a plateau that is incorporating excessive rates of profit.

#### D. CONCLUSION

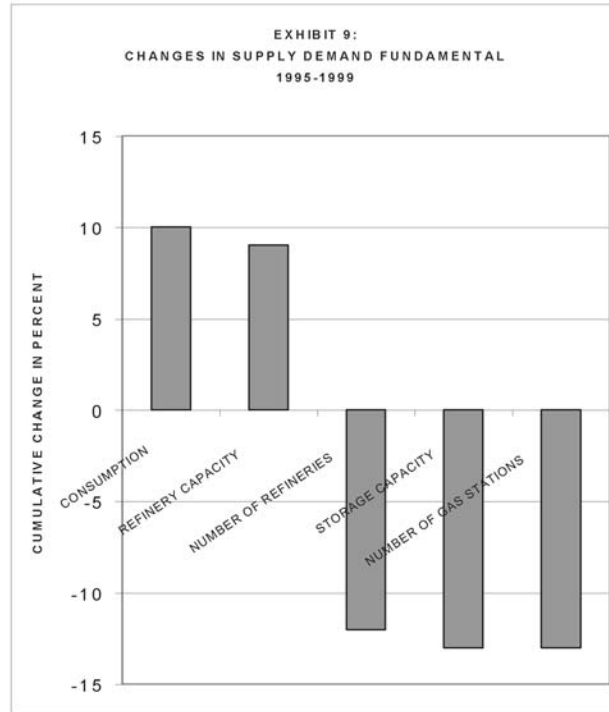
In the past half decade the industry has undergone a major merger wave and subsequent consolidation and restriction of capacity (see Figure 9). While demand for petroleum products grew about 10 percent, refinery capacity continued to fall short. More importantly, the number of refineries, the amount of storage capacity and the number of branded gasoline stations each declined by more than ten percent. This contraction and consolidation reflected business decisions and in the past two years, they have had their inevitable effect. Price spirals of recent years have resulted in a sharp increase in industry profits.

In summary, this analysis demonstrates that gasoline markets are volatile and suffer competitive problems. Market fundamentals including basic conditions (inadequate capacity and inelastic supply and demand), market structures (ownership concentration and vertical integration), corporate conduct (capacity and production decisions), and market performance (price and profits) all point toward the potential for the abuse of market power.

<sup>90</sup> *Fortune 500*, July 18, 2001.

<sup>91</sup> *Business Week*, Spring 2001, p. 92.

<sup>92</sup> U.S. Department of Energy, Energy Information Administration, *Performance Profile*, pp. 7-8.



Sources: Source: U. S. Department of Energy, Energy Information Administration, *Monthly Energy Review*, Tables 3.1a, for consumption; *Petroleum Supply Annual*, Table 36 for refinery capacity and number, Table 44 for storage capacity, *National Petroleum News*, Mid-July Special for number of branded gasoline stations.



#### IV. EQUITY CONSIDERATIONS: THE IMPACT OF EXPENDITURES AND PRICE CHANGES FOR GASOLINE ON HOUSEHOLDS

Economics focuses on efficiency. It has difficulty dealing with distributional or equity issues.<sup>93</sup> In simple terms, economists treat every dollar equally. As a practical matter, an additional dollar gained or lost may mean much more to a low-income person than a wealthy one.<sup>94</sup> This chapter briefly reviews the equity impacts of expenditures on gasoline. These impacts have certainly played a part in the policy debate.

##### A. EXPENDITURE PATTERNS

In Figure 2 we presented the percentage of income spent by those households with vehicles at each income level from the 1994 Residential Transportation Energy Consumption Survey, as well as the expenditures for all households in that survey and the Consumer Expenditure Survey of 1999. It shows the pattern of a necessity, with lower income households spending a larger percentage of their income on gasoline.

Table 6 provides more detail on this issue. Approximately 87 percent of all households had a vehicle. They consumed over 1000 per gallons per year. On average households with vehicles spend over \$1,000 per year.

Virtually all upper middle and upper income households (incomes above \$50,00 per year) have a vehicle. They consume about 1300 to 1400 gallons per year and spend about \$1,500 per year.

Far fewer lower income households have a vehicle and those with vehicles consume considerably less energy. Households with incomes below \$10,000 or those eligible for federal assistance) consume 700 to 800 gallons per year and spend \$800 to \$900 per year.

Expenditures for recent years exhibit similar patterns. Averaged across all households (as opposed to those with vehicles) upper income households spend about three times as much

<sup>93</sup> Scherer and Ross, p. 4, note as one of their performance indicators the following:

The distribution of income should be equitable. Equity is notoriously difficult to define, but it implies at least that producers do not secure rewards in excess of what is needed to call forth the amount of services supplied.

<sup>94</sup> Id., p. 28, offers the following observation on the equity issue in terms of evaluating the impact of monopoly versus competition.

If all families of a given size have similar income utility functions, the marginal utility of income must be higher for the multitudes who supply only their labor services than for the wealthy few with substantial monopoly shareholdings. A redistribution of income away from monopolists and toward labor suppliers will therefore add to the sum of utility for all citizens. Yet however appealing this may appear on intuitive grounds, there is no scientific way of making the interpersonal utility comparison required to support it. Therefore, we tread warily when we say that competition is beneficial not only because it allocated resources efficiently, but also in terms of income distribution equity.

TABLE 6: HOUSEHOLD GASOLINE CONSUMPTION BY INCOME GROUPS (1994)

INCOME GROUP	1994 HOUSEHOLD TRANSPORTATION			1999 CES	
	PERCENT WITH VEHICLE	CONSUMPTION, HOUSEHOLDS WITH VEHICLES	AVERAGE ALL HOUSEHOLDS	AVERAGE ALL HOUSEHOLDS	
		GALLONS PER YEAR	\$/YEAR	\$/YEAR	\$/YEAR
<b>LOW INCOME</b>					
LESS THAN \$10,000	58	670	772	448	512
ELIGIBLE FOR FEDERAL ASSISTANCE	67	828	957	641	
<b>AVERAGE INCOME</b>	87	1067	1234	1076	1071
<b>UPPER INCOME</b>					
\$50,000 TO 74,999	98	1325	1528	1497	
\$75,000 OR MORE	99	1443	1692	1675	1576

Source: U.S. Department of Energy, *Household Vehicle Energy Consumption: 1994*, Table 5.2, 5.18; *Residential Energy Consumption Survey: 1994*, Table 5.1.U. S. Bureau of the Census, Department of Labor Statistics, *Consumer Expenditure Survey: 1999*, Table 2.

on gasoline as lower income households. While consumption rises with income, it does not rise as fast as income. Therefore, the expenditure on gasoline takes a smaller and a larger share of the income of lower income households.

Among very low-income households (incomes below \$5,000), gasoline expenditures take a third of income for those who have a vehicle. For the lower income group as a whole, the percentage is about 15 percent. For lower and lower middle income households, gasoline expenditures take 5 to 10 percent of income for households with vehicles. For all households in these groups, the average percentage of income devoted to gasoline is between 3 and 7 percent. Conversely, for upper income households gasoline expenditures take less than two percent of income.

## B. ENERGY EXPENDITURES AND TAX CUTS

This pattern of spending helps to explain the skeptical reaction that met President Bush's claim that one reason to rush the income tax cut was to offset energy price increases.<sup>95</sup> Because of the distribution of energy expenditures, there is a mismatch between energy price increases and tax cuts. Those upper income households who get most dollar savings from the tax cut do not incur most gasoline expenditures. They receive about 1.5 times as much.

Table 7 shows the distribution of gasoline expenditures and tax cuts by income quintiles. The bottom two quintiles (low and lower middle income) pay about a quarter of the gasoline

<sup>95</sup> NBC, *Evening News*, May 14, 2001.

bill, but they receive about one-twelfth of the tax cuts. The wealthiest 20 percent of the population pays about 31 percent of the gasoline bill but receives about 59 percent of the fully phased in tax cut.

TABLE 7: DISTRIBUTION OF ENERGY EXPENDITURES AND TAX CUTS BY INCOME QUINTILES  
(Percent accruing to each income group)

QUINTILES	GASOLINE <sup>h/</sup> EXPENDITURE	TAX CUT PHASE IN <sup>h/</sup> 2006
Lower	9%	1%
Lower Middle	14	7
Middle	20	14
Upper Middle	25	19
Upper	31	59

SOURCES

Gasoline, Bureau of the Census, Department of Labor Statistics, *Consumer Expenditure Survey: 1999*, Table 2. Quintiles =Table 1, "Quintiles of Income Before Taxes: Average Annual Expenditures and Characteristics, Consumer Expenditure Survey, 1999," Available at the BLS Home page. Tax Cut, Quintiles = *Bush Tax Plan Benefits are Similar to Campaign Proposal: Skewed Toward Wealthy*, Citizens for Tax

Table 8 shows a similar analysis broken down by income levels. Those with incomes below \$30,000 pay about 30 percent of the gasoline bill, but they receive about 20 percent of the tax cut in 2001 and only 11 percent in 2006. Over the seven-year phase in period, they receive only 14 percent of the tax cut, less than half their share of the energy bill. Those with incomes above \$50,000 pay about 47 percent of the energy bill, but they receive about 58 percent of the 2001 tax cut and about 76 percent of the fully phased in tax cut. Over the seven-year phase in of the tax cut, they receive about 70 percent of the tax cut, more than twice their share of the gasoline bill.

TABLE 8: DISTRIBUTION OF ENERGY EXPENDITURES AND TAX CUTS BY INCOME LEVELS

INCOME GROUP	GASOLINE <sup>h/</sup> EXPENDITURE	TAX CUT PHASE IN <sup>h/</sup>		
		2001	2006	TOTAL 2001-2006
Less Than \$10k	6%	2%	0%	0%
\$10K to \$20K	12	7	4	5
\$20K to \$30K	12	12	7	9
\$30K to \$40K	12	12	7	8
\$40K to \$50K	11	11	7	8
\$50K or more	47	58	76	70

SOURCES:

Gasoline, Bureau of the Census, Department of Labor Statistics, *Consumer Expenditure Survey: 1999*, "Income Before Taxes Average Annual Expenditures and Characteristics, Consumer Expenditure Survey, 1999," Available at the BLS Home page. Tax Cut = *Distributional Effects of A Chairman's Mark of the "Restoring Earnings to Lift Individuals and Empower Families ("Relief") Act of 2001*, Joint Committee on Taxation, May 11, 2001

## V. POLICY RESPONSES

### A. ECONOMIC FUNDAMENTALS AND POLICY PRINCIPLES

Public policy responses must reflect physical and economic reality. Since the laws of physics cannot be repealed, public policy must be cognizant of the increased likelihood and severe impact of accidents in energy industries, like refineries and pipelines. Physical and institutional structures must be prepared to deal with accidents in this industry.

The low short run elasticity plays a critical role in price volatility and the exercise of market power. The extremely low elasticity of demand is one of the key characteristics of the gasoline market. Suppliers are well aware of the rigidities in the market and can take advantage of them under the right circumstances. Because the gasoline market is so large, even small and short term pricing abuse imposes substantial costs on the public.

Under these circumstances, firms with relatively small market shares can increase profits by withholding supplies, unless the elasticity of supply is high. Unfortunately, petroleum product markets do not exhibit very elastic supply. Reserve margins and stocks are crucial.

#### 1. Supply

Avenues for increasing supply are available, but they may not be pursued, if left to industry business decisions. Since short-term elasticities are quite low, a variety of resources that can be called upon to meet demand quickly are necessary to prevent price volatility. Having reserve margins of production and transport capacity would dampen price volatility. Stockpiles and storage are the best option when demand shifts or supply is interrupted. Import of product is an important option when refinery capacity is not available or, depending on geographic location, when pipeline capacity is not available.

The recent closure of refineries also suggests an avenue for expanding capacity. The most readily available path to expanding capacity may be to identify existing facilities that have been shuttered, or sites that have been recently abandoned to expand capacity while minimizing environmental impact should be explored. Each of these options should be considered, particularly in markets where capacity is tight and ownership is concentrated.

The behavior of small refiners in response to the elimination of programs that supported their existence makes it clear that public policy can affect the number and geographic distribution of refinery capacity. If we want geographically dispersed refinery capacity to promote local responses to supply problems, we just have to pay for it.

#### 2. Demand

In the long run, reducing the size of the market, without imposing deprivation on consumers, is the major policy challenge.

The consumption patterns deeply embedded in spatial relationships lead us to conclude that increased fuel economy is the more readily achievable approach to reducing gasoline

consumption than changing living patterns. Reducing fuel use per vehicle allows existing mobility patterns to be preserved, while consumption is reduced.

Shifting preferences for vehicles (toward higher efficiency vehicle types) requires greater change in social behaviors. It is also vulnerable to changes in taste. Moreover, it requires a change in the stock over a substantial period of time, perhaps a decade. While policies to affect these behaviors should be pursued, their complexities and difficulties should be recognized.

Attempting to overlay mass transit on existing living patterns may be pursued as a long-term strategy. However, given consumer preferences and the spatial distribution of activity, this is a substantial task. The increasing suburbanization of living patterns frequently results in relatively low densities and high costs for mass transit. Changing the geographic distribution of work, home and play, requires the greatest amount of social change.

### **3. Distributional Effects**

Equity impacts of rising energy prices, particularly as they affect low and lower middle income households, must be dealt with directly. Neither general tax cuts nor existing energy assistance programs, such as the Low Income Home Energy Assistance Program (LIHEAP), address the problem of rising or volatile transportation energy costs. Even if it could be argued that LIHEAP addresses the general energy needs of groups, ad hoc efforts to increase programs like LIHEAP tend to fall short and come long after the impacts of rising energy prices have been felt.

## **B. POLICY TARGETS**

It is time for public policy to seek permanent institutional changes that both reduce the chances that markets will be tight and reduce the exposure of consumers to the opportunistic exploitation of markets when they become tight. To achieve this reduction of risk public policy should be focused on achieving five primary goals

- Restore reserve margins by developing both efficiency (demand-side) and production (supply-side).
- Increase market flexibility through stock and storage policy.
- Discourage private actions that make markets tight/or exploit market disruptions by countering the tendency to profiteer by withholding of supply.
- Promote a more competitive industry.
- Address the disproportionate burden that rising energy price place on lower income households.

### **1. Expand Reserve Margins By Striking A Balance Between Demand Reduction and Supply Increases**

We have earlier identified the hierarchy of policies to reduce demand. Increasing the fuel efficiency of the fleet through increased standards for mileage and use of hybrid vehicles

should be given top priority. Shifting preferences for vehicle types and modes of transportation through taxes and incentives are a second category to be considered.

A goal of achieving an improvement of vehicle efficiency (reduction in fleet average miles per gallon) equal to economy wide productivity over the past decade (when the fleet failed to progress) would have a major impact on demand. It would require the fleet average to improve at the same rate it did in the 1980s. It would raise average fuel efficiency by five miles per gallon, or 20 percent. This is a mid-term target. This rate of improvement should be sustainable for several decades. This would reduce demand by 1.5 million barrels per day. This would return consumption to the level of the mid-1980s.

Expanding refinery capacity by 10 percent equals approximately 1.5 million barrels per day. This would require 15 refineries, if the average size equals the refineries currently in use. This is less than one-third the number shut down in the past ten years and less than one quarter of the number shut down in the past fifteen years. Alternatively, a ten percent increase in the size of existing refineries, which is the rate at which they increased over the 1990s, would do the trick, as long as no additional refineries were shut down.

Placed in the context of redevelopment of recently abandoned facilities or expansion of existing facilities, the task of adding refinery capacity does not appear to be daunting. Such an expansion of capacity has not been in the interest of the businesses making the capacity decisions. Therefore, public policies to identify sites, study why so many facilities have been shut down, and establish programs to expand capacity should be pursued.

Once the magnitude of the task on the supply-side is placed in perspective, and given the objective analysis of the environmental costs involved, the call to overturn environmental laws loses its force. It seems that expansion of supply-side capacity can be accomplished within the current confines of environmental laws. To the extent that the costs of compliance can be demonstrated to be a significant problem, then underwriting compliance (directly through financial subsidies or indirectly through research) rather than relaxing standards should be pursued.

This combination of demand-side and supply-side policies to improve the long run market balance would restore the supply/demand balance to levels that typified the mid-1980s.

## **2. Expanding Storage And Stocks**

It has become more and more evident that private decisions on the holding of stocks will maximize short term private profits to the detriment of the public. Increasing concentration and inadequate competition allows stocks to be drawn down to levels that send markets into price spirals. While the strategic petroleum reserve has been developed as a strategic stockpile and companies generally take care of operating stocks, the marketplace is clearly not attending to economic stockpiles. Companies will not willingly hold excess capacity for the express purpose of preventing price increases. They will only do so if they fear that a lack of supply or an increase in brand price would cause them to lose business to competitors who have available stocks. Regional gasoline markets appear to lack sufficient competition to discipline anti-consumer private stock policies.

Public policy must expand stocks. Participants in the distribution of gasoline can be required to hold stocks as a percentage of retail sales. Public policy could also either directly support or give incentives for private parties to keep storage. It could lower cost of storage through tax incentives by draw down stocks during seasonal peaks. Finally, public policy could directly underwrite stockpiles. We now have a small Northeast heating oil reserve. It should be continued and sized to discipline price shocks, not just prevent shortages. Similarly, a Midwest gasoline stockpile should be considered.

### **3. Taking The Fun And Profit Out Of Market Manipulation**

In the short term, government must turn the spotlight on business decisions that make markets tight or exploit them.

Withholding of supply should draw immediate and intense public scrutiny. It needs to be backed up with investigations. Since the federal government is likely to be subject to political pressures not to take action, state government should be authorized and supported in market monitoring efforts. A joint task force of federal and state attorney's general could be established on a continuing basis. The task force should develop databases and information to analyze the structure, conduct and performance of gasoline markets.

As long as huge windfall profits can be made, private sector market participants will have a strong incentive to keep markets tight. The pattern of repeated price spikes and volatility has now become an enduring problem. Because the elasticity of demand is so low – because gasoline is so important to economic and social life – this type of profiteering should be discouraged. A windfall profits tax that kicks in under specific circumstances will take the fun and profit out of market manipulation.

Ultimately, market manipulation could be made illegal.

### **4. Promoting A Workably Competitive Market**

Further concentration of these industries is quite problematic. The Department of Justice Merger Guidelines should be rigorously enforced. Moreover, the efficiency defense of consolidation should be looked on skeptically, since inadequate capacity is a market problem.

Restrictive marketing practices, such as zonal pricing and franchise restrictions on supply acquisition should be examined and discouraged. These practices restrict flows of product into markets at key moments.

Markets should be expanded by creating more uniform product requirements. These should not result in a relaxation of clean air requirements.

### **5. Low-income assistance**

Rather than fight repeated battles over supplemental appropriations, it would be more effective to index assistance payments to energy prices. It may be time to consider new programs that deal directly with transportation fuel costs. Transportation energy is a necessity in the 21<sup>st</sup> century.

**D. CONCLUSION**

Reviewing this list of policy targets, it can be seen that several policies that the National Energy Policy Task force recommended have been included. The problem with the task force recommendations is that it took far too narrow a view and placed priority on one factor, expanding capacity. The nature and extent of competition and demand are market fundamentals that require equal consideration and emphasis.



RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN MCCAIN TO  
TERRY GODDARD

*Question 1.* Was your office notified that Kinder Morgan was planning to voluntarily shut down the pipeline or did you find out after the fact?

Answer. The Attorney General's Office was not contacted directly by Kinder Morgan about the shut down. We were informed by other government agencies afterwards.

*Question 1a.* What recommendations can you offer to ensure sufficient communication regarding a matter of this significance is adequately communicated to all of the state and local authorities that should be apprized of such an event?

Answer. The Governor created an Essential Services Task Force that is addressing this question, and we support the direction of the Task Force. As long as those agencies that must be notified immediately are so notified by industry, and other agencies are informed promptly on an intra-governmental basis, we believe this will be sufficient.

*Question 2.* What type of communication efforts currently exist between the Arizona Corporation Commission and your office?

Answer. Both the Attorney General's Office and the Arizona Corporation Commission are members of the Governor's Gasoline Working Group. This facilitates some communication on gasoline and pipeline issues. The Commission is not regularly represented by this office, but other communication on a variety of issues is conducted on an *ad hoc* basis.

*Question 3.* All of us are familiar with the horror stories of long lines and exorbitant gas prices in August. Has your office found any evidence that consumers were subject to price gouging by gas station operators following the shutdown of the Kinder Morgan pipeline?

Answer. Yes. We received approximately one thousand inquiries and complaints mostly relating to pricing, shortages, and tying arrangements (in which gasoline retailers were demanding the purchase of additional products/services, *e.g.*, a carwash before consumers could purchase gasoline). There were some extremely high retail gasoline prices in the Phoenix area (up to \$4.97 per gallon regular CBG).

*Question 3a.* Does your office currently have the authority to protect consumers and take action against those suspected of price gouging? If not, what specific authority is needed and what actions is your office taking to be provided such authority?

Answer. Arizona does not have a price gouging statute. While over twenty states have laws protecting consumers, the Arizona Attorney General does not currently have the authority to prosecute those suspected of price gouging.

The Attorney General supports a state price gouging statute, and is working with state legislators to propose price gouging legislation in the upcoming legislative session.

*Question 4.* While Arizona currently has no regulation or law to address the alleged price-gouging during the pipeline shutdown, the Federal Trade Commission (FTC) does have some authority to protect consumers against price fixing. The FTC requires evidence of collusion or coordinated effort in order to begin a formal investigation. What actions has your agency taken to coordinate with other state and Federal agencies to determine whether collusion or coordinated efforts existed?

Answer. The Antitrust Unit at the Attorney General's Office is constantly monitoring the gasoline industry in Arizona for evidence of antitrust violations, such as price fixing or other market manipulations, pursuant to Arizona Revised Statutes sections 44-1401 et seq.

The Attorney General's Office, Antitrust Unit, issued a Civil Investigative Demand to Kinder Morgan for information on gasoline deliveries and inventories, through both the pipeline and in their storage facilities, from July–October 2003. That information is being analyzed. The Attorney General's Office, Antitrust Unit has information from this and other antitrust investigations that can be shared with government employees upon receiving a written confidentiality agreement pursuant to Arizona Revised Statutes § 44-1406 (F).

The Antitrust Unit participates with the FTC's Gasoline Price Monitoring Project, by regularly sending the FTC data on consumer complaints received by the Attorney General's Office relating to gasoline prices.

The Antitrust Unit participates in the Governor's Gasoline Working Group to monitor the gasoline industry in Arizona. In particular, the Antitrust Unit works closely with the Governor's Office, the Department of Weights and Measures, the Department of Commerce—Energy Office, and the Department of Transportation.

The Attorney General's Office has been in contact with the FTC specifically relating to the August 2003 pipeline shutdown. The FTC has offered technical support (economic analysis) as needed. We have not yet requested that support on the pipeline shutdown issue since we have an in-house economist in the Antitrust Unit examining these issues. The Attorney General's Office is unaware of any independent investigation by the FTC on the pipeline shutdown and gasoline shortages.

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RESPONSE TO WRITTEN QUESTIONS SUBMITTED BY HON. JOHN MCCAIN TO  
THOMAS A. BANNIGAN

*Question 1.* There appear to have been problems with the pipeline used to transport gasoline since at least 1997. According to documentation provided to the Committee, an inspection conducted in July 1997 by the Office of Pipeline Safety (OPS) revealed numerous instances of external corrosion. OPS followed up on August 15, 1997, by requesting that then owner Santa Fe Pacific Pipeline Partners (SFPP) submit a plan for recoating the line. A second request for the plan was sent in October 1997. Yet it does not appear Santa Fe Pacific Pipeline ever submitted a plan.

(a) What did OPS do to enforce its request?

(b) Was the line recoated?

(c) What, if any, action did OPS take regarding this requirement when the pipeline changed ownership?

Answer. In December 1997, the OPS Southwest Regional Director met with SFPP to evaluate corrosion on the 8-inch gasoline pipeline and determine a corrosion protection plan. Through his evaluation, the OPS Southwest Regional Director satisfied concerns over whether the pipeline was operating in a safe condition and approved the SFPP corrosion protection plan. Safety is often managed by keeping the pipeline at an operating pressure that will maintain an adequate safety margin even if there are instances of corrosion. Pipelines are designed in accordance with conservative standards to provide for safe operation with some corrosion. The approved plan was based on cathodic protection, monitoring and internal inspection, rather than a general recoating of the pipeline. We enforced the plan by ensuring thorough inspections, both by the OPS and the Arizona Corporation Commission (ACC), that the operator managed corrosion within acceptable levels through corrosion protection, corrosion monitoring, maintenance and pipeline repair.

After Kinder Morgan Energy Partners (KMEP) assumed ownership of the gasoline pipeline, it followed the plan established by SFPP and approved by OPS. The OPS Southwest Region and ACC continue to monitor KMEP corrosion protection of the gasoline pipeline during standard inspections. The ACC inspects the pipeline in Arizona and OPS inspects the pipeline in New Mexico. There have been no significant corrosion issues identified in these inspections.

*Question 2.* According to records supplied to the Committee, an internal inspection by Kinder Morgan on March 2, 2000, of its 6-inch jet fuel pipeline from Phoenix to Tucson revealed significant external corrosion, significant enough in fact that Kinder Morgan reduced the pipeline's operating pressure to 87 percent of the line's maximum operating pressure. OPS was made aware of KMEP's report 6 days later, on March 8. By April 15, OPS was aware that corrosion had eaten away over 50 percent of the pipe wall in some locations. Why, then, did it take OPS until March 14, 2001—a full year after it was notified of what sound like significant safety concerns—to issue a Corrective Action Order?

Answer. After KMEP informed OPS of the significant external corrosion on its 6-inch jet fuel pipeline from Phoenix to Tucson, OPS met with KMEP and reviewed its inspection data, corrosion protection system and its plans to address the external corrosion issues. As a result of this meeting, and the OPS determination of necessary protection actions to provide a greater level of safety, KMEP reduced operating pipeline pressure further to 50 percent maximum allowable operating pressure. OPS agreed to the KMEP plan to correct significant corrosion defects. The plan was based on a very high safety standard for repair that included criteria more stringent than the industry standard. Because KMEP had taken responsible action, OPS did not issue a corrective action order at that time. In February 2001, KMEP completed repair of the pipeline in 52 locations and the replacement of one-half mile of pipeline. This completed the correction of all significant corrosion defects. At no time did OPS allow the operator to operate the pipeline in an unsafe manner.

*Question 3.* Why was the Corrective Action Order issued after Kinder Morgan had made 52 repairs to the line?

Answer. OPS issued the corrective action order (CAO) on the 6-inch jet fuel pipeline to address the long-term corrosion protection of the pipeline. OPS took this ac-

tion because of concerns with KMEP long-term corrosion protection and management plan for this pipeline.

*Question 4.* What additional protective measures were taken by Kinder Morgan as a result of the Corrective Action Order?

Answer. The CAO placed the pipeline under a pressure restriction, required a coating evaluation and a plan to recoat, repair or replace sections shown by the coating evaluation to require remedial measures. Among other requirements, the CAO also required KMEP to again conduct internal inspection of the pipeline.

*Question 5.* Why did it take OPS two years after the Corrective Action Order was issued to issue an amended Order? What happened during these two years to improve the safety of the pipeline?

Answer. During the period of time before the CAO was amended, OPS was satisfied that the pipeline was in a safe condition as a result of the repairs and replacements completed in 2001 and the operator's implementation of provisions of the original CAO. The process evolved as follows: KMEP requested a hearing on the CAO. OPS/RSPA held the hearing and amended the CAO in consideration of new information offered by KMEP. In the amendment, OPS eliminated the recoating requirement because the pipeline was adequately protected from corrosion by aggressive cathodic protection. Further, OPS added to the amended CAO inspection and analysis requirements to verify that corrosion on the pipeline was not active. KMEP has performed a second in-line corrosion inspection of the pipeline and is working on the analysis of the state of active corrosion on the pipeline.

OPS's top priority is to first assure the public safety and security and to subsequently complete the necessary administrative activities in as timely a manner as possible, which was the case in this circumstance.

*Question 6.* In 1997, as a result of a Standard Inspection performed by the Arizona Corporation Commission (ACC), OPS issued a Corrective Order to Kinder Morgan for 5 items of regulatory non-compliance. Based on the information OPS has provided the Committee, it took over 5 years for this Order to finally be closed. Why?

Answer. RSPA legal staff finalize orders in as timely a manner as possible. In recent years, the rapidly growing number of inspectors has led to a significant increase in the number of cases proposed.

*Question 7.* Almost every year since 1994, the Arizona Corporation Commission has performed a Standard Inspection of Kinder Morgan's Arizona pipelines. And almost every year, the Commission has found the company in "probable non-compliance" with respect to certain Federal requirements. Yet it appears that OPS has routinely dismissed ACC's findings as not valid.

*Question 7a.* How do you explain this pattern? Dismissing ACC's inspection results gives the appearance that OPS is letting Kinder Morgan off the hook for violations of Federal safety regulations.

Answer. As with OPS' inspectors, the ACC inspectors propose findings of violations as the first step in the enforcement process. The OPS Regional Director reviews proposed violations and supporting evidence to determine if a violation has occurred, if the case is adequately documented, and if there are extenuating circumstances, such as a waiver or interpretation in effect. OPS processed some violations; and, some ACC proposed findings did not prove to be valid. For example, ACC proposed a violation for not reading cathodic protection devices in accordance with a schedule specified in the regulation. However, KMEP was using an alternate process that provided a greater level of safety and is allowed by regulatory interpretation. OPS' Southwest Region orally informed ACC that the KMEP alternate process was not a violation. In the future, OPS will use a written procedure to provide information in a form more useful to all of our state partners.

*Question 7b.* Are the ACC's inspections being conducted with more scrutiny than OPS?

Answer. No, to assure a consistent quality of inspection, OPS had gone to considerable effort to provide Federal and state inspectors the same training, procedures and information systems. We take state input in the development of these procedures and materials to harmonize our approach. Our goal is for inspections to be uniform across the Nation, whether performed by an OPS or state inspector.

*Question 7c.* Given this pattern, do state inspectors need additional training to better understand OPS' inspection criteria?

Answer. Yes, training for state and OPS inspectors is a continual process. As new regulations and programs are developed, new training programs are prepared and delivered to each inspector. OPS routinely meets with state program directors to communicate information on new policies and programs. OPS has made much of

this information available to state inspectors via the Internet and computer based training to provide more flexible learning opportunities.

*Question 7d.* I can't understand how violations can be subjective determinations—they should be black or white. How does OPS decide what is and is not a safety violation and how is this communicated to ACC and the pipeline owner?

Answer. Pipeline systems vary in complexity, design, operations and maintenance so many pipeline safety regulations are written as performance standards and require judgment to determine compliance. OPS provides training and guidance to inspectors to prepare them to make these judgments. OPS also makes interpretations available to inspectors and industry to guide them in compliance with the regulations. In addition, OPS routinely meets with state program directors to communicate information on new policies and programs and sponsors seminars across the Nation to keep inspectors and operators current on program changes.

*Question 8.* According to the time line developed using OPS data, there are extended gaps between actions taken by OPS to address the safety concerns identified with Kinder Morgan's pipelines in Arizona. It appears that OPS is often lax in follow-up enforcement on identified safety problems. For example, it took OPS a year and seven months just to revise its corrective action order against Kinder Morgan following an August 2001 hearing on safety issues. No action was taken in the interim. How do you explain these enforcement gaps?

Answer. As explained in Q/A5 above, OPS places its greatest priority on assuring that protections are put in place to assure safety and security and subsequently undertakes the appropriate administrative actions. OPS has placed priority on investigating pipeline accidents, developing corrective action orders to manage pipelines that present a hazard to the public and on developing, implementing and enforcing the new operator qualification and integrity management regulations that have a great potential to substantially improving pipeline safety.

During the period of time before the CAO was amended, OPS was satisfied that the pipeline was in a safe condition as a result of the repairs and replacements completed in 2001 and the operator's implementation of provisions of the original CAO. The process evolved as follows: KMEP requested a hearing on the CAO. OPS/RSPA held the hearing and amended the CAO in consideration of new information offered by KMEP. In the amendment, OPS eliminated the recoating requirement because the pipeline was adequately protected from corrosion by aggressive cathodic protection. Further, OPS added to the amended CAO inspection and analysis requirements to verify that corrosion on the pipeline was not active. KMEP has performed a second in-line corrosion inspection of the pipeline and is working on the analysis of the state of active corrosion on the pipeline.

*Question 9.* Was Kinder Morgan's voluntary shut down of the line due solely to safety concerns? If so, what did Kinder Morgan know that the Office of Pipeline Safety did not, since OPS only required the operator to reduce its operating pressure to 80 percent?

Answer. Once the preliminary metallurgical analysis on the cause of failure was completed, and pointed to an exceedingly rare instance of stress corrosion cracking (SCC), Kinder Morgan shut down the Tucson-Phoenix hazardous liquid pipeline. As was evident in our testimony, SCC is not a very well understood phenomenon on hazardous liquid pipelines. Therefore, Kinder Morgan took the cautious approach and shut down the pipeline to enable them to draft a plan to better respond to OPS' Corrective Action Order and prevent a recurrence of the July 30 failure.

For pipelines that rupture suddenly, the cause unknown, or the suspicion exists that other potential flaws reside in the pipeline, OPS normally directs operators to reduce operating pressure 20 percent below the pipeline pressure at the time of failure. This has been proven by pipeline engineers and scholars to provide an adequate safety margin and prevent failures, while the operator prepares and implements a plan to prove the integrity of the pipeline segment that failed. The terms in our Corrective Action Orders are the minimum that a company has to adhere to; pipeline operators are free to take a more conservative approach. Often an operator will operate at a lower pressure sufficient to meet its market demands.

*Question 9a.* Is it typical for an operator to shutdown a line even though OPS has only required Kinder Morgan to reduce the operating pressure to 80 percent of maximum pressure?

Answer. To comply with OPS' Corrective Action Orders, operators resort to a variety of options as long as the safety factors that OPS prescribes are upheld. Operators must at least reduce the pressure to the amount mandated in the Order; they sometimes reduce it further, or shut down the pipeline, depending on conditions of the failure. There have been occasions when some pipeline operators have entirely shut down the affected segment because supply to their markets can be serviced by an-

other pipeline. End user contracts, nominations, needs, and the weather conditions determine strategies for operators. As long as public and environmental safety is not compromised, OPS has not intervened in these decisions.

*Question 10.* Once Kinder Morgan shut down its line, why did it take 5 days—from August 14 to August 19, 2003—for OPS to approve Kinder Morgan’s plan for hydro-static testing?

Answer. The Corrective Action Order required Kinder Morgan to submit a plan to mitigate the effects of the stress corrosion cracking-failure before returning the pipeline to normal operation, *i.e.*, lifting the pressure restriction on the Tucson-Phoenix gasoline pipeline. At a meeting on Thursday, August 14, to discuss the terms of the Order, Kinder Morgan submitted its hydrostatic test plan to OPS. OPS gave KMEP the approval to start preparing the pipeline for hydrostatic test; a process that often takes 3 to 4 days.

OPS evaluated Kinder Morgan’s proposed hydrostatic test plan and found it inadequate to remove the ordered pressure restriction for a stress corrosion cracking failure. On Friday, August 15, OPS notified Kinder Morgan that OPS would not grant approval to remove the pressure restriction only on the basis of a successful hydrostatic test at the pressure proposed. Because SCC is exceedingly rare on hazardous liquid pipelines, there was little precedent for determining the pressure level for a hydrostatic test.

In a meeting on the morning of Tuesday, August 19, Kinder Morgan explained to OPS that the purpose of the proposed hydrostatic test was only to allow the pipeline to operate at 80 percent of the failure pressure, as described in OPS’ Order and not return to full operating pressure. This had not been clear in Kinder Morgan’s proposed hydrostatic test plan. OPS’ Order already permitted operation at 80 percent of failure pressure; there was no requirement for KMEP to submit a plan. OPS considered the test as an additional mitigation effort that increased confidence that the pipeline could operate safely at 80 percent of the pre-failure pressure and immediately approved Kinder Morgan’s hydrostatic test. Kinder Morgan began hydrostatically testing the pipeline segment late in the evening on August 19. The Tucson-Phoenix pipeline is now operating at 50 percent of the pre-failure pressure.

*Question 11.* Did Kinder Morgan meet the 30-day deadline for submitting a written plan with corrective measures as required by OPS’ Corrective Action Order? [*no*]

Answer. By the 30-day deadline, KMEP had submitted its hydrostatic test plan, a pipeline replacement plan and portions of its stress corrosion cracking (SCC) plan to OPS. Because the cause of the pipeline failure was determined to be SCC, a rare cause of failure for hazardous liquid pipelines, the operator and OPS had additional considerations to address in completing a comprehensive SCC plan within 30 days.

*Question 11a.* Did OPS take any official action when the plan was not submitted and if so, when?

Answer. Yes, OPS continuously communicated with KMEP during this period of time. On September 12, 2003, OPS’ leadership team had a conference call with the president of Kinder Morgan Liquid Pipelines to discuss its plan. During that meeting, OPS notified Kinder Morgan that it had not met the 30-day deadline on its SCC plan and that OPS had issues with parts of the plans that had been submitted. Kinder Morgan conveyed the complexity of the SCC issue and the need for more time to develop a comprehensive SCC plan. Each CAO has a provision that allows the OPS Regional Director to grant additional time for compliance with the CAO for good cause. On October 3, OPS amended the CAO to specifically address SCC, grant additional time to develop a SCC plan, and to require the SCC plan to address the 6-inch jet fuel line as well as the gasoline pipeline.

*Question 11b.* What signal does that send Kinder Morgan, let alone the public, about OPS’ commitment to strong and unwavering enforcement?

Answer. We see our enforcement policy as, “tough, but fair.” We believe our policy sends the message to operators and the public that OPS is focused on safety, the enforcement of the pipeline safety regulations and justice.

*Question 12.* I understand that a metallurgical exam by Kinder Morgan showed that the cause of the rupture in Tucson was stress crack corrosion, which is more commonly found in gas pipelines, not liquid pipelines. Does OPS or Kinder Morgan or even the ACC know what caused the corrosion in this case?

Answer. Stress Corrosion Cracking, an environmentally assisted cracking phenomenon, is a generic term that describes all types of cracking in pipelines where the surrounding environment, the pipe material, and stress act together to reduce the strength or load-carrying capacity of a pipe. Other types of environmentally assisted cracking have been found in other industries: boilers have developed caustic cracking, nuclear reactor carbon steel coolant piping systems have developed stress

corrosion cracking, and stainless steel piping in ammonia units in chemical plants have cracked, as have down-hole pipes in sour oil wells.

None of the parties, OPS, ACC or Kinder Morgan, know exactly what caused the stress corrosion cracking in the Tucson-Phoenix pipeline. It is known that the union of environment, material, temperature and stress play a role in stress corrosion cracking; but at what concentration and what exactly was the catalyst for this failure is unknown. This is why OPS' Corrective Action Order plainly states that Kinder Morgan's plan must provide for the verification of the integrity of the affected segment, must address all known or suspected factors in the July 30 failure, and must include description of the assessment criteria and methods that will be used in the evaluation and prioritization of any integrity threats that are identified in the pipeline section. Furthermore, Kinder Morgan must also evaluate the adjacent Phoenix-Tucson hazardous liquid pipeline to ensure that stress cracking corrosion signatures are not evident on the other pipeline. This will enable OPS, Kinder Morgan, and ACC determine the stimuli for the stress corrosion cracking on the Tucson-Phoenix pipeline.

*Question 12a.* Are older liquid pipelines more susceptible to problems associated with stress crack corrosion?

Answer. Pipeline age, alone, is not a factor in the formation of stress corrosion cracking. The formation of stress corrosion cracking depends upon the proper combination of pipeline material, soil condition (environment), temperature and local stress. Various inquiries into the stress cracking phenomenon show that stress corrosion cracking is not a widespread problem. OPS is sponsoring research and hosting a public workshop in Houston on December 2, 2003 to share information between experts and practitioners about how to better understand and manage stress corrosion cracking.

*Question 12b.* What actions do Kinder Morgan and other pipeline operators need to take to halt stress corrosion cracking and prevent future ruptures?

Answer. As mentioned previously, stress corrosion cracking is a relatively new and evasive phenomenon on hazardous liquid pipelines. The factors associated with SCC are known, but the relationship among these factors has not been scientifically established. On October 2, 2003, OPS issued an Advisory Bulletin to pipeline operators on how to evaluate their pipeline systems for stress corrosion cracking. Replacement of long sections of pipeline to stave off SCC would be economically impractical, but pipeline operators can try to reduce the stresses or change the environment immediately in or adjacent to the pipeline. For example, SCC is a more common phenomenon in natural gas pipelines, and it has been found that stress corrosion cracking usually occurs within 20 miles of a compressor station where operating temperatures are the highest. So, natural gas operators have reduced the discharge temperatures of the natural gas to reduce the risk that SCC will form.

Pipeline operators that have already experienced stress corrosion cracking can perform predictive soil modeling to understand the soil characteristics that promoted stress corrosion cracking. Questions to be answered include: Are those soil properties unique to that region where stress corrosion cracking was manifested? What processes can be implemented to improve the drainage characteristics of soil enveloping the pipeline? What role does the topography play in contributing to stress corrosion cracking? OPS is prodding pipeline companies to answer these questions to curb the role that soil plays in contributing to stress corrosion cracking.

As stresses imparted into the pipeline during installation may promote SCC, operators should also be cognizant of the construction practices. They must also be familiar with the flaws in their pipelines, because stress corrosion cracking has been shown to occur in areas, such as dents, where stresses increase. Pipeline companies must also be familiar with the geometry of their pipeline throughout its route to enable them to better identify areas susceptible to stress corrosion cracking as a result of pipeline stress. Stress irregularities can be caused by internal operating pressure, residual stress during manufacture, bending stresses during installation or out-of-roundness and secondary stresses which can be due to soil settlement or land slides, and stresses due to temperature differences.

Hazardous liquid pipeline operators should re-evaluate the pipeline operations to minimize pipeline cycling. By reducing pressure and fatigue cycling, the likelihood of growing existing stress corrosion cracks is reduced. Thus, there is a very large range of operations, maintenance, and integrity enhancement activities that pipeline operators can take to stem the growth of stress corrosion cracking.

*Question 12c.* What actions are being taken by OPS to ensure pipeline operators take the appropriate steps to address the increased risk of ruptures due to stress corrosion cracking?

Answer. At this time, OPS does not believe that there is an increased risk of ruptures due to stress corrosion cracking relative to other modes of failure. Latent flaws resulting from third-party damage continue as the major cause of failure, followed by external galvanic corrosion, internal corrosion, operator error, and other factors.

From 1985–2001, there were only two instances of stress corrosion cracking failures in hazardous liquid pipelines: 1998 in Missouri and 2001 in Kansas. Both these failures occurred on pipeline facilities owned by Mid-America Pipeline Company. Metallurgical reports revealed that the 1998-accident was caused by circumferentially-oriented SCC and the 2001-accident was caused by longitudinally oriented SCC.

Since those two failures, RSPA/OPS has learned of three more longitudinally oriented stress corrosion cracking failures that occurred in 2003: July 10 on a CITGO pipeline in Cook County, Illinois; July 16 on a Dome Pipeline Corporation pipeline in Barnes County, North Dakota; and July 30 on the KMEP pipeline in Pima County, Arizona.

OPS has also seen indications of SCC on facilities of Enbridge Pipelines, Inc. in Minnesota and Wisconsin. But Enbridge Pipelines, Inc. has not experienced a failure due to stress corrosion cracking.

Even given the scarcity of pipeline ruptures due to stress corrosion cracking, OPS has taken significant action to ensure that pipeline operators take the appropriate steps to discover, manage, mitigate, and remedy stress corrosion cracking indications on their pipelines.

On October 2, 2003, OPS issued an Advisory Bulletin to alert natural gas and hazardous liquid pipeline operators about the threats from SCC, and to fully consider SCC when developing and implementing integrity management plans. OPS advised operators to determine whether their pipelines are susceptible to SCC and assess the impact of SCC on pipeline integrity. Based on this evaluation, an operator should prioritize additional in-line inspection and hydrostatic testing and take actions to re-mediate problem areas.

During the week of October 6, 2003, OPS senior engineers convened to discuss the threats posed by SCC and to revise the Hazardous Liquid Integrity Management Plan protocols and guidance to enable inspectors to better evaluate SCC risks. OPS is also preparing a strategy to tackle this issue on natural gas pipelines.

OPS senior inspectors and corrosion specialists have also begun developing a series of questions as an addendum to the standard inspection forms. These forms will be available early next calendar year and will complement OPS' suite of inspection protocols.

Because SCC detection technology is not yet fully adequate OPS initiated two R&D programs directed toward identifying and quantitatively measuring SCC:

- BAA #1 award announcement on November 15, 2002 to Southwest Research Institute, San Antonio, TX, and Pipeline Research Council International, Inc., Washington, DC, to modify in-line inspection tools to detect stress measurements that identify corrosion, mechanical damage, cracks, wrinkles, etc. (OPS \$80,000 Industry \$80,000)
- BAA#3 Award announcement on September 8, 2003 to Battelle Corporation of Columbus, Ohio, and Pipeline Research Council International, Inc., Washington, DC, to develop quantitative measures to assess corrosion defect severity and determine failure pressure of pipelines (OPS \$196,000, Industry \$221,000)

OPS also commissioned a technical stress corrosion cracking study. OPS is currently preparing a synthesis study that will be informed by the wide range of work currently underway within OPS, companies and trade associations, and research organizations. The purpose of the synthesis study is to publicly develop a consensus that accurately characterizes what is known (*e.g.*, frequency and consequence of SCC, susceptibility parameters, technological/procedural approaches to detecting and characterizing it, best practices in managing SCC, consensus standards development, regulatory approaches to SCC in the U.S. and elsewhere, appropriate post-SCC failure event response, etc.) and identify knowledge gaps. The results of the study will be made public for researchers and for pipeline companies and regulators to use in controlling risks from SCC.

To complement the technical study on stress corrosion cracking, OPS is also hosting a technical workshop on December 2, 2003, in Houston, Texas to address this important safety issue. The experts in the workshop will review the framework and draft contents of OPS' technical stress corrosion cracking study. Any deficiencies identified within the workshop with the study framework will be fixed and the currency of all information will be validated. This workshop will be hosted by the OPS and its State pipeline safety partners, as well as by standards organizations and pipeline trade associations.

*Question 12d.* I understand that several other recent liquid pipeline ruptures have been attributed to stress corrosion cracking. How serious is this rise in cases and should we be concerned that liquid pipelines nationwide are going to rupture from stress corrosion cracking?

Answer. OPS is concerned about stress corrosion cracking, although it has not been a major cause of pipeline failure to date. During the past five years, only five of 740 reported accidents on hazardous liquid pipelines were caused by stress corrosion cracking. The recent set of pipeline failures caused by SCC is an alert to OPS, state pipeline safety agencies, and the pipeline industry that SCC is a viable threat to pipeline safety. As described above, OPS' strategy to improve the management of SCC is to increase our understanding of SCC, improve detection technology and expand the emphasis on SCC management in integrity management programs.

*Question 13.* Following the shut down of the Kinder Morgan pipeline, I asked the Secretary of Transportation, Norman Mineta, to work to ensure the operational safety of the pipeline as soon as possible and to take any appropriate Administrative action to address the obstacles to the timely transportation of available gas supply throughout the affected Arizona communities. I also asked him what, if any, additional action Congress should take now to further address this important public safety issue. In his response, the Secretary indicated that the population *encroachment* is a major issue for pipeline safety nationwide.

*Question 13a.* What is your office doing to address the safety problems associated with population encroachment?

Answer. OPS is providing leadership in managing the public risks of encroachment of communities and other development on pipeline rights-of-way. In conjunction with the Federal Energy Regulatory Commission, OPS asked the Transportation Research Board (TRB) of the National Academy of Sciences to begin a study to address issues of encroachment and maintenance on pipeline rights-of-way. OPS's goal is to identify promising approaches for local government for managing land use near pipeline rights-of-way—guidelines on what development is compatible with pipelines, and what development to avoid. The study we have commissioned brings together all key stakeholders—including representatives from local government, developers, pipeline companies, environmental groups and others.

In enacting the Pipeline Safety Improvement Act of 2002 (PSIA), Congress also recognized the need for this information and mandated that we complete this study, and that we also include consideration of how best to preserve natural resources (*i.e.*, trees) that can pose a problem for thorough monitoring of activity or problems along the pipeline.

The TRB met on this issue for the first time in September 2003 and expects to deliver its draft report to OPS by March 2004. This study is an important step in informing local officials and others involved in managing the risks of encroachment and in assessing the feasibility of developing better guidance. OPS is committed to advancing the work done by TRB in this short time-frame in a follow-up study.

In the meantime, to further our objective to educate communities adjacent to pipelines about the consequences of pipeline releases, OPS has hired a completely new cadre of engineers, called Community Action and Technical Support (CATS) engineers. Their primary task is to meet with community representatives to listen to their concerns and provide information about:

- the hazards posed by pipelines,
- operators, and the commodities their pipelines transport
- what measures exist in our Code of Federal Regulations for their protection; and,
- how to prevent damages to pipelines and how to respond to pipeline accidents.

*Question 13b.* Does OPS have any authority to stop encroachment? If not, what Federal or state agency does?

Answer. OPS does not have authority to stop encroachment. The Federal Energy Regulatory Commission (FERC) is responsible for the siting of interstate gas transmission lines. Aside from the interstate gas pipeline siting, decisions about land use are primarily under the control of local governments.

*Question 14.* In reports issued in 2000 and 2001, the U.S. General Accounting Office (GAO) criticized OPS' practice in the 1990s of issuing warning letters and letters of concern rather than issuing fines. From 1990 to 1998, OPS decreased the proportion of enforcement actions in which it proposed fines from about 49 percent to about 4 percent. What fines has Kinder Morgan been assessed by OPS?

Answer. OPS has fined Kinder Morgan for violations ranging from failure to inspect and test relief valves to failure to establish a written anti-drug plan. Since 1990, OPS has assessed Kinder Morgan a total of \$176,700 in fines. In 1998, OPS



fined Kinder Morgan (Santa Fe) \$3,000 for failure to install valves on its 6-inch and 8-inch pipelines in Tucson, Arizona where the pipeline crosses the Santa Cruz River. OPS also fined Kinder Morgan (Santa Fe) \$12,700 in 1994 for failing to provide adequate cathodic protection on their 8-inch pipeline that extends from Steins Pass, Arizona to Tucson.

*Question 14a.* Has OPS changed its policy of issuing warnings and started imposing fines? Why or why not?

Answer. Since 2000, OPS has refocused its efforts to achieve compliance with the pipeline safety regulations through enforcement actions and use of civil penalties. We take a “tough, but fair” approach in dealing with operators. In the years 1995–1999 prior to our change in policy, the yearly average number of civil penalties was 19 and the average penalty was \$19,000. In 2000–2003, the years our new policy has been in effect, the average number of civil penalties was 42 and the average penalty was \$45,000. These numbers do not include the very large proposed civil penalties as a result of the Olympic and El Paso pipeline accidents. Including the proposed civil penalties for Olympic and El Paso pipelines, the average proposed civil penalty for the 2000–2003 period would be \$91,000.

*Question 14b.* The new pipeline safety law, enacted last year, requires that GAO issue a report on OPS’ assessment of the impact on pipeline safety of issuing warning letters rather than assessing fines. Since this study is on-going, I am concerned that OPS may still not know how to judge the impact of different approaches on safety. Does OPS have a clear understanding of the safety impact from warnings versus fines?

Answer. OPS does have qualitative understanding of the value of each of our enforcement tools, which range from a warning letter, to a notice of probable violation with a civil penalty, to a corrective action order. Each tool has a valid purpose and use. To better quantify our understanding of the impacts of enforcement tools and to improve enforcement policy, OPS has created the position of enforcement policy director. This director will develop enforcement policy, guidance material and performance measures for enforcement. This is intended to provide, for example, more detailed guidance on some inspection types, penalty-setting, and on collecting and presenting evidence.

*Question 14c.* When OPS issues a warning letter or letter of concern, what does it do to follow up if the pipeline owner does not respond?

Answer. Warning letters, letters of concern and other enforcement action are recorded in OPS enforcement records. A standard procedure in OPS’ compliance manual requires an inspector to prepare through review the history of the operator *e.g.*, accidents, enforcement actions, including warning letters and letters of concern. During the inspection, the inspector is required to follow up on warning letters and letters of concern and to prepare a notice of probable violation and civil penalty if the operator has not corrected the issue. We specifically look for instances of repeated violations in targeting our inspections.

*Question 15.* OPS’ regulations for integrity management require that, after completion of the initial baseline inspection, liquid pipelines be internally inspected every five years. Why 5 years and not 2 or 3 or 7?

Answer. The maximum interval allowed in regulation is the five-year interval within which pipelines must be re-inspected in high consequence areas. Based on the risk factors pipelines experience, some pipelines may have to be re-inspected more frequently.

In setting this interval, OPS considered the rate of growth of corrosion, technology and expertise available to detect corrosion, and the current rate of inspection of pipeline ongoing prior to our issuance of regulation. OPS set an aggressive goal that more than doubled the rate of inspections at the time. We knew that most pipeline operators whose pipelines can be internally inspected with an intelligent tool (pig) prefer to deploy pigs for inspection because they cull more information from the pipe body. Pigging, however, is a complex operation requiring careful preparation and scheduling. Operators must consider such factors as availability of pigging equipment, weather conditions, and whether service interruptions to perform the test can be tolerated. In considering testing frequency, OPS considered availability of inspection tools and especially skilled personnel for interpreting test data. Our consultation with pigging experts in the industry revealed that the five year interval was the most aggressive standard we could realistically set, based on available capacity to serve the market. Many of the pipelines in high consequence areas are operated by smaller companies. If the demand for internal inspection tools exceeds available supply, the smaller companies will not be able to compete with the larger companies who can offer larger contracts to the pigging vendors.

*Question 15a.* It seems to me that the intervals between integrity management inspections should be based on risk, including the age of the pipeline and other factors that affect the integrity of the pipeline. Are these factors that OPS takes into consideration?

Answer. Yes. The intervals between integrity management inspections must take risk into consideration. The five-year re-inspection frequency is an upper limit that pipeline operators must adhere to on pipelines in high consequence areas. In many cases OPS expects pipeline operators to re-inspect their facilities more frequently with different tools to ensure that all risks are covered and mitigated.

OPS's integrity management rule clearly states that an operator must base the frequency of evaluation on risk factors specific to each pipeline segment and must consider the results of the baseline and periodic integrity assessments, information analysis, and decisions about remediation, preventive, and mitigative actions to arrive at a re-inspection interval. The risk factors that a pipeline operator must consider are results of the previous integrity assessment, defect type and size that the assessment method can detect, defect growth rate, pipe size, metallurgy, coating type, seam type, age, leak history, cathodic protection history, commodity transported, and the terrain's susceptibility to geo-technical hazards, to name a few.

*Question 15b.* What is the average age of liquid pipelines in the U.S.?

Answer. OPS does not collect data on the age of liquid pipelines, but we have worked with the American Petroleum Institute (API) to sponsor studies on age. OPS is in rulemaking on a requirement for hazardous liquid pipeline operators to provide information on integrity management program performance measures. This effort will be realized through the collection of data from Hazardous Liquid Pipeline Operators via the Annual Report (RSPA Form 7000.1). Collection of miles of pipe by nominal pipe size by location will commence in FY05 for calendar year 2004, and will lend itself to review and analysis of age of pipe issues.

Based on the API work, in 2001, Trench & Kiefner reported in *Oil Pipeline Characteristics and Risk Factors: Lessons From the Decade of Construction*, that pre-1930 pipe represents 2 percent of the share; pipe constructed in 1930–1939 represents 7 percent; 13 percent was constructed between 1940–1949; 22 percent in 1950–1959; 23 percent from 1960–1969; 17 percent from 1970–1979; 9 percent from 1980–1989; and 8 percent was constructed in 1990 or later.

Thus the majority of hazardous liquid pipeline is between 23 and 53 years old. The characteristics of the pipe vary by the manufacturing and construction techniques in use at the time of construction. The “average” age therefore, would not necessarily provide a clear indicator for understanding pipeline performance.

*Question 16.* You indicate in your statement that OPS inspects Kinder Morgan's facilities about every three years. How does an OPS inspection compare with the inspections performed by ACC?

Answer. OPS' goal is to perform a standard inspection on each pipeline unit every two to three years. These inspections are performed by either OPS or state inspectors. A pipeline unit is an identifiable section of pipeline such as Kinder Morgan's pipelines in Arizona. ACC and OPS inspections should be essentially the same. OPS provides state and OPS inspectors with the same training, procedures and guidance materials. Our goal is for inspections to be uniform across the Nation whether performed by an OPS or state inspector.

*Question 17.* In your opinion, should older pipelines such as Kinder Morgan pipelines in Arizona be subject to more stringent requirements or more frequent inspections?

Answer. OPS's integrity management rule clearly states that an operator must base the frequency of evaluation on risk factors, including age, specific to each pipeline segment and must consider the results of the baseline and periodic integrity assessments, information analysis, and decisions about remediation, preventive, and mitigative actions to arrive at a re-inspection interval. The risk factors that a pipeline operator must consider are results of the previous integrity assessment, defect type and size that the assessment method can detect, defect growth rate, pipe size, metallurgy, coating type, seam type, age, leak history, cathodic protection history, commodity transported, and the terrain's susceptibility to geo-technical hazards, to name a few.

*Question 18.* In background information provided to the Committee prior to this hearing, your office stated that hazardous liquid pipelines tend to be located in rural areas. That is certainly not true in this case. What action is being taken at the Federal level to identify where pipelines pose the greatest risk to public safety?

Answer. To protect communities and the environment from pipelines, OPS published the integrity management rules that apply to and increase testing and safety standards for all hazardous liquid pipelines. The integrity management regulations

apply to high consequence areas that include commercially navigable waterways, high population areas, other populated areas, and unusually sensitive areas like drinking water or ecological areas that are unusually sensitive to environmental damage from a hazardous liquid pipeline spill. These regulations also require pipeline operators to develop and follow a safety program including continuous evaluation of pipelines including mandatory testing with a five-year interval for retesting.

As a joint government-industry effort between the OPS, other Federal and state agencies, and the pipeline industry, the National Pipeline Mapping System (NPMS) is a full-featured geographic information system database that contains the locations and selected attributes of natural gas transmission lines, hazardous liquid trunk lines, and liquid natural gas facilities operating in onshore and offshore territories of the U.S. The NPMS is created from mandatory submissions of pipeline and LNG facility data by pipeline operators. The NPMS National Repository is responsible for collecting, processing, and building a national seamless pipeline database from the submitted data.

OPS maps, maintains, and updates these areas periodically on the National Pipeline Mapping System (NPMS). Nonetheless, pipeline operators are responsible to ensure that they have identified all high consequence areas that could be affected by a pipeline segments. Operators are also responsible for periodically evaluating pipeline segments to look for population or environmental changes that may have occurred around their pipelines and to keep programs current with this information. The rule also requires operators to include a process for identifying which pipeline segments could affect high consequence areas, and to take measures to prevent and mitigate the consequences of a pipeline failure that could affect a high consequence area. Thus, operators need to consider how each of their pipeline segments could affect high consequence areas.

*Question 18a.* Do different safety standards apply to pipelines depending on where they are located?

Answer. Yes, different safety standards apply to pipelines depending on where they are located. Pipelines in areas defined as unusually sensitive areas, that include populated areas and ecologically sensitive areas, must be maintained according to more stringent standards than other pipelines. NPMS maps are a starting point to determine sensitivity, but operators are required to look further. Operators must account for the impact of the commodity, the topography, and geological conditions of the terrain it traverses and ascertain if a spill “could affect” a high consequence area. In this “could affect” analysis, operators must also consider the amount of product that could be released, possibility of a spillage in a farm field following the drain tile into the waterway, ditches or ruts parallel or perpendicular to the pipeline that assist the migration of a spill into farther reaches, and exposure of the pipeline segment to operating pressure exceeding established maximum operating pressure.

The regulation requires that operators of pipelines in, and that could affect, high consequence areas must:

- Conduct a baseline assessment plan meeting very stringent requirements, and must perform an analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure;
- Perform an analysis that integrates all available information about the integrity of the entire pipeline and the consequences of a failure;
- Develop criteria for remedial actions to address integrity issues rated by the assessment methods and information analysis;
- Create a continual process of assessment and evaluation to maintain a pipeline’s integrity;
- Identify preventive and mitigative measures to protect the high consequence area
- Develop methods to measure the program’s effectiveness; and,
- Create a process for the review of integrity assessment results and information analysis.

*Question 18b.* Should there be a greater focus placed on pipelines in populated areas?

Answer. Yes. There is a greater focus placed on pipelines in high consequence areas that include populated areas, other populated areas, and ecologically sensitive areas. Moreover, the integrity management rule, for example, requires pipeline operators to incorporate newly identified high consequence areas into their baseline assessment plans. Pipeline operators are also required to have communication systems with fire, police, and other public officials during emergency conditions includ-

ing natural disasters. Liquid pipeline operators, for example, are required to patrol their pipelines at least 26 times per year. Our analyses of patrolling procedures show that in populated areas, pipeline operators patrol their systems much more frequently.

*Question 19.* The Pipeline Safety Improvement Act of 2002, which reauthorized Federal pipeline safety programs through Fiscal Year 2006, contains several new initiatives to improve pipeline safety. One such initiative requires the Secretary of Transportation to study land use practices, zoning ordinances, and preservation of environmental resources with regard to pipeline rights-of-way and their maintenance.

*Question 19a.* What is the status of this study?

Answer. RSPA/OPS established a cooperative agreement with the National Academy of Science's Transportation Research Board (TRB) to conduct a study of encroachment risks and how they can be managed. This agreement was finalized on September 26, 2002. The TRB met on this issue for the first time in September 2003 and expects to deliver its draft report to OPS by March 2004. This study is an important step in informing local officials and others involved in managing the risks of encroachment and in assessing the feasibility of developing better guidance.

*Question 19b.* Why has it taken DOT so long to initiate and complete this important study as required by Congress?

Answer. OPS actually finalized an agreement with the TRB to perform the study prior to the signing of the Pipeline Safety Improvement Act of 2002. The TRB experienced some delay in initiating the study because of a turnover of key staff. The TRB has worked very carefully with congressional staff and stakeholders to define the study and select a study committee. The committee established to conduct this study is comprised of senior representatives with national-level expertise from interested organizations including all levels of government, environmental organizations, pipeline companies, academia, and technical consultants. Further, the Committee has set forth three public meetings for which presentations have been solicited from other interests, experts and others who share responsibility for ensuring the protection of communities (e.g., emergency responders) and reliability of critically needed energy supplies.

*Question 19c.* When will it be completed?

Answer. The TRB plans to deliver a draft report to OPS by March of 2004.

*Question 20.* How many violations of Federal pipeline safety laws and regulations have been identified by OPS or its state partners in the last year?

Answer. Between October 2002 and October 2003, OPS initiated 109 enforcement actions against operators for violating minimum Federal pipeline safety regulations as promulgated by 49 CFR Part 190 thru Part 199 and Part 40. Typically, each enforcement action will address one to five violations.

*Question 20a.* How many of those violations resulted in the issuance of a corrective action order by OPS? How many fines were issued as a result of these violations?

Answer. OPS does not typically issue violations as part of a Corrective Action Order (CAO). A CAO is an enforcement tool that allows OPS to manage actively the risk of a pipeline that may be a hazard to the public. A CAO allows OPS to impose certain restrictions on an operator's pipeline, including a reduction in operating pressure, and generally requires the operator to take corrective action on their pipeline.

OPS does however, issue Compliance Orders (CO) to operators as a result of a violation. Between October 2002 and October 2003, OPS initiated one CO against an operator for violating the minimum Federal pipeline safety regulations. OPS did not issue a fine as a result of this CO.

As a result of the 109 enforcement actions initiated, OPS fined operators a total of \$863,500.

*Question 20b.* Has OPS ever fined Kinder Morgan, and if so, what violation was involved? Has Kinder Morgan ever been fined for problems associated with the two pipelines that run between Tucson and Phoenix?

Answer. OPS has fined Kinder Morgan for violations ranging from failure to inspect and test relief valves to failure to establish a written anti-drug plan. Since 1990, OPS has assessed Kinder Morgan a total of \$176,700 in fines. In 1998, OPS fined Kinder Morgan (Santa Fe) \$3,000 for failure to install valves on its 6-inch and 8-inch pipelines in Tucson, Arizona where the pipeline crosses the Santa Cruz River. OPS also fined Kinder Morgan (Santa Fe) \$12,700 in 1994 for failing to provide adequate cathodic protection on its 8-inch pipeline that extends from Steins Pass, Arizona to Tucson.

*Question 21.* OPS has established an on-line system for residents nationwide to use to determine what pipelines are operated in the vicinity of their homes. The site asks for your zip code and then provides a list of operators in your area and how to contact them for additional information. However, a recent test by Committee staff showed the information was in several cases incomplete or non-existent. One zip code within the Nation's capital showed no pipeline data available. Another showed no contact information available for BP Pipeline North America, even though Committee staff was able to get contact information on-line from BP within minutes. Do you believe this system is adequate to inform the general public on the risk associated with living near a major pipeline?

Answer. OPS does believe that the public access tool will be sufficient in meeting its goal of providing operator contact information to the public. The tool is based on contact information for pipeline operators that is required by law to be submitted by operators to the National Pipeline Mapping System (NPMS). The database of pipeline operator contact information is not yet complete. While nearly 99 percent of all pipeline mileage under OPS jurisdiction has been submitted to the NPMS, approximately 45 percent of pipeline operators have not submitted their contact information. Any current deficiencies in the public access tool are due to noncompliance on the part of pipeline operators. OPS believes that pipeline operators have overlooked the requirement to submit contact information. OPS is pursuing compliance orders against operators that have not submitted their contact information.

*Question 21a.* What actions are you going to take to address the problems identified by Committee staff?

Answer. OPS has made concerted efforts to contact pipeline operators regarding their statutory requirement to submit pipeline and operator contact data to the NPMS. OPS posted an Advisory Bulletin for all jurisdictional pipeline operators (<http://ops.dot.gov/notices/AdvisoryBulletin/03-2449.pdf>) on February 3, 2003, which appeared in the Federal Register (i.e., FR, Vol. 68, No. 22, Monday, February 3, 2003, page 5338). OPS also conducted NPMS public meetings and operator conferences via various industry groups and forums. Two weeks before the submission deadline date of June 17, 2003, OPS e-mailed operators to remind them of the approaching deadline for submission of pipeline and operator contact data. Unfortunately, most operators have focused on submitting their pipeline data and many neglected to submit their operator contact information.

OPS is preparing notices proposing compliance orders to order operators who have not provided the mapping and contact information required by Section 15 of the Pipeline Safety Improvement Act of 2002, to submit the information. This is the limit of authority granted to OPS under the PSIA. The PSIA does not allow OPS to assess penalties for violations of the statutory requirements added by the Pipeline Safety Improvement Act of 2002. In addition, administrative civil penalties are not available to enforce the requirements to review the effectiveness of public education programs (Section 5), to have an employee qualification program meeting statutory requirements in the absence of standards regulations (Section 13), and the requirements for gas integrity management programs (Section 14).

The compliance order will also provide instructions for accessing an online form where operators can submit their contact information. OPS will aggressively work with the pipeline operators to ensure that they are in compliance. Additionally, OPS is pursuing the ability of states to similarly enforce compliance by intrastate pipeline operators.

*Question 22.* Please describe the relationship between the Office of Pipeline Safety and the state pipeline safety officials, in this case, the Arizona Corporation Commission. In particular, please explain which agency is responsible for what, including inspections and the subsequent enforcement against violations of safety regulations.

Answer. OPS administers the national regulatory program to assure safe transportation of natural gas, petroleum, and other hazardous materials by pipeline. The Federal/State partnership is the cornerstone for assuring uniform implementation of the pipeline safety program nationwide. Most states have supported the concept of common stewardship in pipeline safety. The Federal/State partnership allows leveraging of resources to deliver a cost-effective program that has one of the best safety records in transportation. OPS and their state partners regularly participate in joint government-industry-public committees and task forces to discuss and address concerns related to risk management, compliance, emerging technology, damage prevention, and environmental protection.

While the Federal Government is primarily responsible for developing, issuing, and enforcing pipeline safety regulations, the pipeline safety statutes provide for state assumption of the *intrastate* regulatory, inspection, and enforcement responsibilities under an annual certification. Federal pipeline statutes, on the other hand,

provide for exclusive Federal authority to regulate *interstate* pipelines. But, OPS may authorize a state to act as its agent to inspect interstate pipelines, but retains responsibility for enforcement of the regulations.

The ACC, along with five other states, participates in the interstate hazardous liquid program. Similarly, Arizona is one of 13 “certified” states with the authority to inspect and enforce regulations on intrastate hazardous liquid pipeline facilities.

For natural gas pipelines, Arizona is one of nine “agreement” states with the authority to inspect and report on interstate natural gas pipeline facilities. Arizona is also one of 50 “certified” states with the authority to inspect and enforce regulations on intrastate natural gas pipeline facilities.

Since this incident in Arizona, we have learned that there were opportunities to improve communication which would have increased the efficiency of our oversight. We are taking many actions to improve communications through increased written follow-up in enforcement actions, more immediate distribution of interpretations, more informal group interaction, and tracking state by state involvement in policy making activities.

*Question 23.* Is the division of duties between OPS and ACC identical to OPS’ relationship with all states or does each state have a different agreement?

Answer. OPS’s relationship with each state and the division of duties between OPS and its agents are similar to the one with ACC. The agreements OPS crafts with the states are also the same based on the type of certifications that each state possesses.

*Question 24.* When was the last time the KM pipelines that run through AZ were inspected? When will KM’s baseline inspections, as required by the integrity management requirements, be completed? Have you considered expediting this inspection given the rupture and the other problems that OPS had been concerned about on the six inch line?

Answer. The last time ACC requested to inspect Kinder Morgan’s pipelines in Arizona was in 2001. In 2002, ACC requested to inspect Kinder Morgan’s facilities once again. In 2003, ACC continued inspection on all safety-related condition reports that Kinder Morgan had submitted to OPS.

In 2002 and 2003, OPS and ACC also conducted the integrity management inspections on Kinder Morgan’s pipeline facilities. This series of inspection began in January 2002. The “quick-hit” inspection was performed from January 15–17, followed by two weeks of comprehensive inspections that were conducted from April 7–11 and April 21–25. The California State Fire Marshal and Virginia State Corporation Commission also participated in these two weeks of comprehensive inspections. On July 24 and 25, 2003, OPS continued with the comprehensive inspections to review records.

Kinder Morgan has subdivided their pipelines in Arizona into eight sections for purpose of inspection. This year Kinder Morgan completed the baseline inspections on the Yuma Marine Corps Air Station lateral, the Luke Air Force Base in Phoenix, and the 6-inch Phoenix to Tucson line. In 2004 Kinder Morgan plans to complete the baseline inspections on the eight-inch pipeline south of Tucson and the 8-inch line from Tucson to Phoenix. Another 12-inch line south of Tucson was initially scheduled for baseline inspections in 2007, but after the July 30 incident OPS directed Kinder Morgan to schedule it sooner, and we expect baseline assessment of this line to be completed in 2004.

The 12-inch Phoenix to Tucson line and the 20-inch Yuma to Phoenix line were installed within the past 20 years. Therefore, its baseline inspections are planned to occur in 2006 and 2007. OPS will determine if these two pipelines baseline inspections need to be expedited based on the findings on the other lines that will have a completed baseline inspection by 2004.

*Question 25.* Should inspection results or potential public safety concerns be disclosed to the public?

Answer. OPS believe that plans for inspection, the technology used and the progress with those inspections should be shared, including repairs identified and completed. New regulations will be issued soon to address required performance reporting and additional regulation on other communication requirement may follow.

*Question 26.* How many corrective action orders has OPS issued this year? What accountability features are included in these orders? For example, I understand that many times they do not have a date certain for responding to the order. Further, and I believe it was with the very case we are discussing today, even though OPS’ order required a date certain reply, KM had not replied by that deadline and OPS did not issue any further official document or impose a fine or anything. What signal do you think such lax oversight sends to pipeline operators, let alone, the public?

Answer. OPS has issued 18 Corrective Action Orders (CAO) this year, more than three times the combined total for the previous three years.

All CAOs issued by OPS have time limits within which the pipeline operator must respond to the Regional Director. A provision of each CAO gives the OPS regional directors the authority to grant an extension of time for compliance with the term of the CAO for good cause. The regional directors are given this authority to provide flexibility because CAOs deal with unknown causes of failure, complex technical issues that often do not have immediate solutions, complex testing and inspection, and lengthy state and local permit processes needed for testing and repair. The plan must provide for the verification of the integrity of the affected segment, and must address all known or suspected factors in the failure. All of these factors can add substantial time to completing the requirement of a CAO. Pipeline operators have an incentive to submit and execute their remedial action plans promptly because the pressure restriction prevents them from meeting their contractual delivery volumes. Granting additional time for good cause is not lax oversight. It is necessary to achieving quality in resolving safety issues.

We do not agree that a delay in the submittal or execution of the remedial action plan sends a signal of lax oversight to the operator or the public. First, OPS, through the pressure restriction, eliminates the immediate hazard to the public and the environment. The pressure restriction is not lifted until all elements of the remedial action plan are completed and reports are made available to OPS and its state partners within whose jurisdiction the failure occurred. Second, OPS and its agent, if any, follow up closely on all the activities that the operator is implementing on its pipeline.

OPS's record in issuing CAOs and resolving safety issue sends a strong message that we are applying thorough oversight over the pipeline industry. We are achieving results. Comparing the last five years to the previous five, hazardous liquid incidents have decreased by 28 percent. Two years ago, the volume of oil spilled decreased by 33 percent from the ten-year average. Last year there was a 57 percent decrease.

*Question 27.* Following the initial rupture of your pipeline in a residential area of Tucson, the OPS ordered Kinder Morgan to reduce the operating pressure to 80 percent of maximum pressure. However, instead of reducing the operating pressure, Kinder Morgan chose to shut down operations for repairs. Why did you take the extreme action of shutting down all operations of the pipeline, which was counter to OPS's recommendations?

Answer. On July 30, 2003, Kinder Morgan's 8" pipeline from Tucson to Phoenix failed during normal pipeline operations. Kinder Morgan and OPS originally believed the cause of the release was an ERW pipe seam failure. Based on the March 8, 1989, Pipeline Safety Alert Notice (ALN-89-01) and discussion with the Department of Transportation Office of Pipeline Safety Southwest Region (DOT), the pipeline was repaired and restarted on August 1, 2003, based on the following operating parameters:

- Operate the pipeline at 50 percent maximum operating pressure (MOP) for five (5) days
- Operate the pipeline at 60 percent MOP for one (1) day
- Operate the pipeline at 70 percent MOP for one (1) day
- Operate the Pipeline at 80 percent MOP until further notice.

As part of Kinder Morgan's on-going integrity program, the joint of pipe from the July 30, 2003, incident was sent to an independent lab for metallurgical analysis. On August 8, 2003, Kinder Morgan received the metallurgical report. The report concluded that the cause of the rupture was high pH SCC. Kinder Morgan had never experienced SCC before on one of its refined petroleum pipelines. Given this information and the pipeline's location near populated areas in the City of Tucson, Kinder Morgan determined that the only safe option was to shut down the pipeline (which was still operating at 50 percent MOP) and conduct further testing.

*Question 27a.* What factors did you consider in deciding to shut down the pipeline?

Answer. Kinder Morgan considered public safety, the pipeline's location near populated areas in the City of Tucson and the uniqueness of the SCC phenomenon on a refined products pipeline. These were the driving factors in making the decision that the only safe option was to shut down the pipeline and conduct further testing to ensure the integrity of the pipeline.

As stated above, Kinder Morgan originally thought the failure was an ERW seam failure, and restarted the pipeline at a reduced MOP. However, on August 8, 2003, Kinder Morgan received a metallurgical report indicating that the cause of the fail-

ure was high pH Stress Corrosion Cracking (SCC), a failure mode never before experienced on a Kinder Morgan liquids pipeline. The metallurgical report and subsequent conversations between our technical staff and the third party metallurgical consultant did not provide technical justification for allowing our line to operate at reduced pressure without further testing. Given this information and the pipeline's location near populated areas in the city of Tucson, Kinder Morgan determined that the only safe option was to shut down the pipeline (which was still operating at 50 percent MOP) and conduct hydrostatic testing of the pipeline.

*Question 27b.* Was Kinder Morgan's voluntary shut down of the line due solely to safety concerns? If so, what did Kinder Morgan know that the Office of Pipeline Safety did not, since OPS only required the operator to reduce its product to 80 percent?

Answer. Yes. Kinder Morgan decided that in order to ensure public safety, the line needed to be hydrostatically tested before service resumed.

*Question 27c.* Considering that you believed shutting down the pipeline was the best course of action, and OPS believed the pipeline could continue to operate at reduced pressure, should one assume that OPS should have ordered you to shut down the pipeline? Was OPS wrong?

Answer. OPS's original corrective action order was premised on the assumption that the failure mode was due to an ERW seam failure. The order's timeline for gradual resumption of operating pressure reflects that fact. As the owner and operator of these pipelines, it is Kinder Morgan's ultimate responsibility to operate its system safely.

*Question 27d.* Considering the overall impact on safety and gas supply, did Kinder Morgan take the right course of action by shutting down the pipeline?

Answer. The decision to temporarily shut down the 8" pipeline on August 8 was the safe and prudent course of action. A fundamental principle that we constantly emphasize to our operations personnel is: "If in doubt, shut the pipeline down and restart the line only after the doubts have been eliminated." High pH SCC has never been experienced before on a Kinder Morgan refined products pipeline and we believed the line had to be hydrostatically tested to ensure it could be operated safely. Although the resultant service disruption inconvenienced consumers, far greater would have been the criticisms and consequences of continuing to operate the line and having another release. Moreover, our flexibility and responsiveness were key to providing petroleum products to Phoenix during the service disruption, a task complicated by the surge in demand as "panic buying" set in.

Kinder Morgan is proud of our safety and compliance record. Safety and compliance are integral to every decision we make. We take seriously our commitment to operate a safe and reliable pipeline system, and we strive for operational excellence and incident-free operations. Kinder Morgan's track record in Arizona has been outstanding since we acquired these pipelines in March 1998. During this time, we have transported more than 440 million barrels of fuel into the state, and the recent product release in Tucson was the first time we have experienced an incident with one of our Arizona pipelines that was not a result of third party damage. We have had two releases due to third party damage and the July 30 release, which was due to high pH stress corrosion cracking (SCC). There were no injuries or fatalities as a result of any of these incidents.

Immediately after we decided to temporarily take the 8" Tucson to Phoenix line out of service because of the sec failure mode, we initiated steps to mitigate the impact of the shutdown. Throughout the weekend of August 9-10, modifications were made to our Tucson terminal. These modifications involved converting several tanks from conventional service to CBG service and connecting a truck rack lane to these tanks. These modifications allowed our shippers to transport by truck volumes of CBG gasoline from the East that otherwise would have moved over the closed 8" pipeline. Approximately 12,000 b/d were trucked to the Phoenix market as a result of these facility modifications while the 8" pipeline was out of service.

Kinder Morgan schedulers were also called to work the weekend of August 9-10 to contact our shippers and initiate the process of nominating additional volumes over the West Line to make up for volume shortfalls on the temporarily closed line between Tucson and Phoenix. During the week following the shutdown of the 8" pipeline, Kinder Morgan's West Line and barrels trucked from Phoenix, were meeting over 92 percent of the average daily demand (175,000 b/d) in the Phoenix market. For just over half the days in the month of August, deliveries to Phoenix exceeded the average daily demand in Phoenix.

Kinder Morgan's deliveries, however, do not tell the entire story. We do not know the inventory levels at the five other Phoenix terminals at the start of the month of August or for any day thereafter. That information is not in our possession and



can only be obtained from the owners of those terminals. We do know, however, that nationally the trend is to maintain inventories at levels only necessary to meet anticipated demand and avoid the holding costs of excess inventory. When you combine the temporary shutdown of the 8" pipeline with current inventory management practices and the spike in demand triggered by panic buying and "topping-off" of tanks, there were resultant shortages of gasoline. Further complicating the supply/demand picture were logistical difficulties in accommodating increased trucking of products from Tucson terminals and outside of the state. (This problem in turn was exacerbated by weekly driving hour limits on truck drivers in Arizona. These restrictions were later relaxed.)

It should be reiterated, however, that the flexibility and responsiveness of Kinder Morgan's employees to the service disruption and the round-the-clock efforts to restore service on the 8" pipeline, allowed us to cover over 92 percent of the average daily demand in Phoenix. Two facts have special note: Kinder Morgan's West and East Lines delivered 8.4 million more gallons of total products into Phoenix in August of 2003 than it did in August of 2002. Looking solely at gasoline volumes in 2003 over 2002 for the month of August, Kinder Morgan actually transported 13 million more gallons of gasoline. Again, a reflection both of the flexibility of our pipeline operations in Arizona and the extraordinary demand conditions in the Phoenix market.

*Question 28.* It is clear from information provided to the Committee by OPS that Kinder Morgan should have been aware of corrosion problems on both the 6-inch and 8-inch pipeline prior to purchasing the lines in 1998. What was the condition of Santa Fe Pacific's pipelines in Arizona when they were acquired by Kinder Morgan in 1998?

Answer. Santa Fe Pacific had internally inspected the following lines prior to Kinder Morgan's acquisition: the EP-TU 8" in 1988 and 1996 (approximately 304 miles), the EP-TU 12" in 1995 (approximately 165 miles) and the TU-Weymouth 8" in 1996 (approximately 12 miles). There had been no generalized corrosion leaks on the TU-PX 8" pipeline since 1980, on the PX-TU 6" since 1988, and no recorded corrosion leaks on the EP-TU 12" and EP-TU 8" pipeline. In addition, there were no outstanding DOT Corrective Action Orders on these pipelines.

*Question 28a.* What repairs and safety improvements has Kinder Morgan made to the lines since acquiring them?

Answer. Kinder Morgan's track record in Arizona has been outstanding since we acquired these pipelines in March 1998. Our commitment to regulatory compliance is equally as strong. Kinder Morgan has a pipeline safety staff that actively participates in regulatory rulemaking, tracks all new regulations and ensures that our plans and procedures comply with pipeline safety regulations. We have a management of change process that ensures that changes are communicated to operations personnel. We have a separate internal auditing division that conducts audits of our field operations to ensure that we are complying with all applicable safety regulations.

We are routinely inspected by the U.S. DOT Office of Pipeline Safety (OPS) and State Pipeline Safety Agencies, such as the Arizona Corporation Commission (ACC) and the California State Fire Marshall's office. In Arizona, alone, we have been inspected four times by the ACC since 1998 (1998, 1999, 2001 and 2003; in 1999 the OPS participated in the Arizona Audit). The Southwest Region has also audited the pipeline section between New Mexico and Texas twice. In addition, we have been subject to audits of our Procedural Manuals, Integrity Management Plan and Operator Qualification Program by OPS. These audits have not uncovered any major compliance issues.

A specific example of our commitment to safety and compliance is one of the elements of our preventive maintenance program—our Integrity Management Program (IMP). Kinder Morgan Energy Partners (and its predecessor SFPP) have been inspecting pipelines with Magnetic Flux Leakage (MFL) in-line inspection tools ("smart pigs") since the early 1970s. As part of our ongoing preventive maintenance programs, we were internally inspecting pipelines in Arizona before such actions were ever required by the Federal or state government. In fact, all Kinder Morgan pipelines in Arizona had been smart pigged at least once before the effective date of the IMP rule and most had been smart pigged at least twice. The 8" Tucson-Phoenix pipeline was inspected in 1996 and 1999 and the 6" Phoenix to Tucson pipeline in 1999 and 2003. In each case, we took appropriate action in the interest of public safety. Maintenance crews were dispatched to excavate and investigate the anomalies, and where necessary, appropriate repairs were made.

Our overall philosophy is that internal inspection is very effective in detecting pipeline defects, allowing us to repair potentially detrimental defects before they re-

sult in a release. By combining information found during the in-line inspections, cathodic protection surveys and coating surveys, we can identify areas along the pipeline where recoating may be necessary and where more cathodic protection rectifiers might be needed. We are then able to focus our resources and take the appropriate remedial measures. We believe the existence of such a proactive program is why there has not been a leak due to generalized metal loss corrosion on these pipelines in Arizona in the last 15 years.

Another example of our commitment to safety and compliance is Kinder Morgan's corrosion control program. This program conforms to DOT and National Association of Corrosion Engineers (NACE) Standards. Cathodic Protection inspection tests include

1. Annual inspections of all CP test leads and rectifiers
2. Six times per year inspection of all rectifiers, bonds & other devices
3. Minimum 26 times per year aerial patrol of rectifier indicator systems (in most cases this is weekly)
4. Inspection of pipe coating and pipe, if coating is removed, whenever the pipe is uncovered

Our current IMP has been updated to incorporate DOT's 2001 regulations. Our response, repair and mitigation strategies did not require any major revisions as a result of the 2001 DOT regulations; however, as most of the new regulatory requirements were already a part of our previous IMP program.

*Question 28b.* Why has it taken so long, and I note only after a rupture that put the lives of local residents at risk, for you to replace some of the pipeline?

Answer. As stated above, Kinder Morgan is proud of our safety and compliance record. Safety and compliance are integral to every decision we make. Kinder Morgan's track record in Arizona has been outstanding since we acquired these pipelines in March 1998. The recent product release in Tucson was the first time Kinder Morgan experienced an incident with one of our Arizona pipelines that was not a result of third party damage.

The decision to replace some of the pipeline follows on the heels of the favorable outcome of a petition filed by Kinder Morgan at the FERC regarding an overall expansion project involving our East Line. This filing was necessary to ensure that an economically acceptable rate methodology would be approved in advance of spending approximately \$200 million on this project. Included in that project is the replacement of the 8" pipeline between Tucson and Phoenix.

*Question 29.* When the Office of Pipeline Safety issued a Corrective Action Order on Kinder Morgan's jet fuel line, Kinder Morgan objected to recoating the line, arguing that cathodic protection was sufficient to prevent corrosion. Had Kinder Morgan made improvements to the cathodic protection since it was initially installed in 1957?

Answer. In our review of the cathodic protection history for LS-53/54, Kinder Morgan believes that actions were taken in the past to enhance the cathodic protection system for these pipeline systems. LS-53/54 was constructed in 1956 without cathodic protection. It was approximately two years later before cathodic protection was applied. Based on cathodic protection surveys, more anode ground beds and rectifiers—the current source for cathodic protection, were installed along the pipeline.

This is important because, although the November 1999 in-line inspection indicated a number of locations of generalized corrosion, there was no way to identify from the report when the corrosion took place. In an effort to determine if the generalized corrosion was active or on-going corrosion, electrical and chemical tests were conducted at each location excavated. These tests demonstrated that the line was receiving adequate cathodic protection and that there was no active generalized corrosion taking place at the anomaly locations. These tests demonstrated that the generalized corrosion that was indicated on the in-line inspection report was most likely generalized corrosion that occurred in the years prior to cathodic protection being installed.

*Question 30.* Kinder Morgan conducted an internal inspection on a portion of its 6-inch jet fuel pipeline in November 1999, yet the results, which revealed significant corrosion, were evidently not known until the following March. Why does it take so long to get the results of these inspections? It would seem that there could be some serious pipeline accidents while pipeline operators are awaiting inspection results.

Answer. Internal inspection surveys are performed by electronic devices called "smart pigs", which are inserted into the pipeline and conveyed by the moving product through the pipeline. Kinder Morgan typically uses two types of "smart pigs"

in these inspection surveys. The most common type is the Magnetic Flux Leakage (MFL) pig.

MFL pigs contain powerful magnets that saturate the steel pipe walls with magnetic flux. MFL pigs also contain numerous sensing elements spaced around the circumference of the inside diameter of the pipeline. If the pipe wall contains a defect the magnetic field in the pipe wall will change, and this change will be detected by the sensing elements in the pig. The smart pig records the 0° Clock position of the pipe defect, as well as the lineal distance along the pipeline -by use of odometer wheels located on the pig. The length of each joint of pipe is also recorded, along with the location of valves, tees, shop bends, etc. All of this data, which is recorded and stored in electronic format in the memory module of the smart pig, is later down-loaded to a computer for thorough analysis.

In addition to MFL pigs, Kinder Morgan typically runs an Electronic Geometry pig (EGP) that uses the vendor's proprietary eddy current technology to identify changes in the pipeline diameter and geometry. With this data, the vendor can infer the existence of possible dents and other pipeline features.

Smart pig vendors have developed algorithms to assist in converting the raw MFL and EGP signals to determine what type of defect exists and the size of the defect. The process of converting the raw MFL and EGP data signals is a phased approach. Initially, the MFL data is analyzed to provide a preliminary report that identifies areas of immediate concern but lacks much of the detailed analysis found in the final report. For the final report, MFL data is combined with EGP data to identify the location of possible dents and other pipeline features. In addition, detailed calculations are performed to grade the discovered features and provide additional information of use to the operator. More thorough analysis is performed, and the EGP data is incorporated to provide a very detailed report of the pipeline condition.

*Question 31.* While you have publicly committed to replacing the remaining 8-inch line between Tucson and Phoenix, it is my understanding that you have yet to provide OPS with a plan to ensure the overall public safety of the pipeline as required by OPS's Corrective Action Order issued on August 6, 2003.

*Answer.* We have been in communications with OPS and ACC since the initial release and have been coordinating with them our plans of initial repairs and subsequent investigation and corrective actions. We have submitted several plans to OPS and are currently reviewing and revising our field investigation plan based on their review and amended corrective action order. Moreover, the 8" pipeline continues to operate at 50 percent of its maximum allowable operating pressure and will do so until the sec investigation is completed.

KMEP submitted our first investigation plan to OPS on August 14, 2003. On September 5, 2003, we submitted an overview of our plans to replace the 8 inch pipeline within Tucson. On September 29, 2003, we submitted our initial version of our field investigation protocol for the remainder of our Tucson to Phoenix pipeline. In October 3, 2003 OPS issued KMEP an amended corrective action order. In response, we modified our September 5, 2003 plan and submitted it on November 3, 2003. OPS reviewed this plan and requested some additional information on November 14, 2003. We are currently working on modifications per their request that will be submitted by December 19, 2003. Meanwhile, we have been actively implementing the SCC investigation plan for the 8" pipeline.

*Question 31a.* When do you intend to provide OPS with a plan for review?

*Answer.* Kinder Morgan submitted its Stress Corrosion Cracking (SCC) Field Investigation Protocol to DOT on September 29, 2003. This document outlined an analytical method for identifying areas along the pipeline system with the potential for SCC. Plans for a field inspection program were presented in which direct knowledge from the 1-mile area encompassing the July 30, 2003, release site will be used to delineate the severity of SCC and establish the contributing characteristics to locate other areas along the pipeline system with the potential for sec.

*Question 32.* While published reports indicate that Kinder Morgan has committed to replacing the remaining 8-inch sections of the gasoline pipeline between Tucson and Phoenix, I would like know what actions Kinder Morgan is taking to ensure the safety of the 12-inch portions of that line, as well as the safety of the 6-inch product line, that has been subject to the same corrosion problems.

*Answer.* The July 30, 2003, failure in an 8" portion of the pipeline between Tucson and Phoenix was not the result of generalized metal loss corrosion. Kinder Morgan has not had a metal loss corrosion release on an Arizona pipeline since 1988 and on the 8-inch pipeline since 1980. The July 30 failure was caused by high pH Stress Corrosion Cracking (SCC), a phenomenon that is new to the refined products pipeline industry and involves cracking and not wall loss due to corrosion. As noted elsewhere, our pipelines are effectively protected from corrosion by cathodic protection

systems. Moreover, these pipelines are also incorporated into our Integrity Management Plan which is discussed in answers to questions 2, 3 and 4.

*Question 32a.* Is Kinder Morgan going to replace that line as well?

Answer. The currently proposed East Line Expansion would not affect the 6" pipeline. The 6" pipeline is connected to the 20" West Line bring product to Arizona from west coast refineries.

*Question 32b.* How can the citizens of Arizona be assured that Kinder Morgan is acting with their safety in mind?

Answer. The decision to temporarily shut down the 8" pipeline on August 8 reflects the company's commitment to public safety. In the face of a unique failure mode on a line operating in a metropolitan area, we shut the line down for additional testing. Public safety trumps public wrath. We regret, and have apologized publicly, for the inconveniences occasioned by this incident, and we took immediate and decisive steps to address the temporary shortfall and to get the line back up and operating. This focus on safety is part of our operating philosophy and as our safety record demonstrates, the citizens of Arizona can expect that we will continue to operate our facilities safely and reliably.

*Question 33.* Recent reports have indicated the Federal Energy Regulatory Commission (FERC) has already approved a special tariff to pay for improvements in Kinder Morgan's El Paso to Phoenix pipeline. How much will the tariff cost your customers and the consumers of Arizona? When did Kinder Morgan ask FERC to approve a special tariff to improve the pipeline?

Answer. On September 19, 2002, Kinder Morgan (SFPP, L.P.) submitted a "Petition for Declaratory Order" to the FERC requesting the "Commission issue a Declaratory Order that (1) SFPP will be permitted, pursuant to 18 C.F.R. 342(a) (2001), to charge cost-of-service tariff rates on its East Line in the event its proposed expansion described in the Petition (the "East Line Expansion") goes into service, provided that there is a difference of 20 percent or more between such cost-of-service tariff rates and tariff rates calculated pursuant to 18 C.F.R. 342.3 (2001), the Commission's indexing regulation; and (2) if, in response to a protest concerning the level of the tariff rates, the Commission suspends East Line cost-of-service tariff rates filed by SFPP following the East Line Expansion, those rates will be accepted for filing and made effective as of the date proposed by SFPP, subject to refund."

The Petition was assigned Docket No. OR02-13-000, Timely interventions and protests were filed by Chevron Products Company, Tosco Corporation, Valero Marketing and Supply Company and the Navajo Refining Company.

*Question 33a.* Do you know why it took FERC so long to act on your application for a special tariff?

Answer. In its Petition, SFPP requested "that the Commission issue an expedited decision on this Petition no later than the end of December 2002."

On January 30, 2003, the FERC issued an "Order on Petition for Declaratory Order" in Docket No. OR02-13-000. The Order said that cost-of-service rates should be not be incremental, that a Declaratory Order is appropriate and that a minimal suspension is appropriate. Thus, FERC had granted the relief requested.

Navajo Refining Company filed a request for rehearing of this Order, which caused the FERC to review its January 30, 2003 Order.

On July 12, 2003, the FERC issued a draft "Order on Rehearing" which was then officially issued on August 1, 2003. The Order denied Navajo's request for rehearing and "affirmed the assurances requested by SFPP to facilitate construction of the needed expansion of its East Line."

*Question 33b.* Do you believe FERC would have approved the tariff if the rupture had not occurred?

Answer. As the above time line indicates, FERC's decisions were in no way the result of, or influenced by, the July 30 incident in Tucson.

*Question 34.* While serious questions can be raised about the continuity of OPS's oversight of your operations, it is very clear that for a number of years Kinder Morgan has been aware of corrosion issues that raise serious safety concerns on both of its pipelines that transport fuel between Tucson and Phoenix. Why did it take you until now, after a rupture that put the residents of Tucson in harms way, to move expeditiously to replace the problem pipe?

Answer. Again, it is important to note that the July 30, 2003, failure was not the result of generalized metal loss corrosion. Kinder Morgan has not had a metal loss corrosion release on an Arizona pipeline since 1988 and on the 8-inch pipeline since 1980. The July 30 failure was caused by high pH SCC, a phenomenon that is new to the refined products pipeline industry and involves cracking and not wall loss due

to corrosion. As for the replacement of the 8-inch pipe within the City of Tucson, this project had been in the planning phase prior to this incident.

*Question 35.* It was recently announced that Kinder Morgan is purchasing a number of refined petroleum product terminals from Shell Oil, including terminals in Tucson and Phoenix. Given what we have learned regarding the maintenance and operations of your existing pipelines in Arizona, what assurances can you give the residents of Tucson and Phoenix regarding the continued safe operation of these facilities?

Answer. We take seriously our commitment to operate a safe and reliable pipeline and terminal system and please refer to the answer to the third subpart of question 6.

*Question 35a.* The Pipeline Safety Improvement Act, enacted last December, requires operators to carry out a public education effort. What, specifically, has Kinder Morgan done in meeting this statutory requirement? What additional actions to you plan to take based on what you learned following the rupture?

Answer. Kinder Morgan has had a public education program in place that met all of the requirements of the applicable regulation and meets the majority of the elements now specified in the Act. We utilize a direct mail out campaign to mail safety brochures to the general public, schools, hospitals, and a pre-selected group public officials identified by SIC codes, and any entity that receives mail located within 1/8 of mile radius of our pipeline at two year intervals. We also mail these brochures to emergency response organizations and persons involved in excavation. In addition, we offer to meet with the emergency response organizations and have met with many of them. Our safety brochure instructs recipients how to: notify us if they intend to dig, identify our pipelines, recognize a leak, take appropriate steps if they notice a leak, and immediately report a leak. It also outlines emergency action procedures for public Safety Officials.

Kinder Morgan has been an active participant in the API Task Force developing RP 1162 "Public Awareness Programs for Pipeline Operators" the guidance document referenced by the OPS. OPS was also on this task force. In addition, we participated in the OPS Workshop, as a presenter, on September 16 and 17, 2003 in Baltimore Maryland.

We began reviewing our Plan shortly after the enactment of the act. We attended the Public Workshop in Houston, Texas on September 4 and 5, 2003. We have completed the self assessment and filed the certification with the OPS. Based on the assessment, we are adding Mayors and School District Administration officials in areas that we traverse to our list of recipients, and adding verbiage regarding the benefit of pipelines to our brochure.

Regarding additional actions, we have participated in numerous public meetings discussions the July 30 incident and our current pipe replacement project.

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RESPONSE TO WRITTEN QUESTION SUBMITTED BY HON. JOHN MCCAIN TO  
JONATHAN OLCOTT

I am the attorney for the Silvercreek Homeowners Association in Tucson, Arizona. You have asked me to comment on five questions. My answers follow:

*Question.* Were the residents of Silver Creek aware of the Kinder Morgan pipeline before the rupture?

Answer. For the most part, the residents were not aware of the pipeline. Phase 1 of the development is approximately 400 feet from the pipeline. The existence of the pipeline was not disclosed in the Subdivision Public Report. There are 288 households in Phase 1. There are signs that indicate the presence of the pipeline. The residents of Phase 1 would have little reason to observe the signage. Only one homeowner in Phase 1 indicated she saw the signage.

Phase 2 immediately adjoins the pipeline easement. Phase 2 consists of only approximately 40 households. Phase 2 is still under construction. Only a few homes are occupied. The pipeline is disclosed in the Public Report for Phase 2. Whether any purchaser read and understood the document is doubtful. No purchaser in Phase 2 has indicated whether the purchaser knew the location of the pipeline before the rupture.

To summarize the answer to this question, only one homeowner indicated she was aware of the pipeline before the rupture.

2. Evacuation. There was no evacuation. The homes that were doused with gasoline were under construction, and not occupied. Were the homes occupied, there would have been evacuations.

3. Legal Action. This subject is privileged. Only my client can waive the privilege.

I am concerned about two elements of damage. The first is the contamination to the common area. A contractor dumped contaminated dirt on the common area. Kinder Morgan has yet to provide us with contamination reports. Neither has Kinder Morgan provided us with remediation plans. Next, the recent revelation of leaking is a concern. I have previous experience with gasoline pipeline cases. Old pipelines leak. We are evaluating the extent of the contamination in the aquifer and groundwater.

4. On-line Information. No homeowners indicated they were aware of the pipeline through a website. It strains credulity that a purchaser would scour the Internet for that information. I represent more than 1,000 homeowners associations in Arizona. I cover at least 300,000 households. I have been doing this for 16 years.

The vast majority of homeowners do little investigation before they purchase. They rarely read the Public Report, Declaration of Covenants, Conditions and Restrictions, or the other 12 inches of papers they are provided in connection with the purchase. There is little possibility they would search the Internet for proximate utility pipelines.

I do not believe a website could ever provide adequate disclosure of a pipeline that conveys hazardous materials.

5. Recommendations for Proper Disclosure. If a new subdivision encroaches on a formally remote haz mat pipeline, there should be conspicuous signage. The signage should be located such that prospective purchaser would view it before the sale. In the alternative, developers should be required to display a conspicuous disclosure on sales materials.

6. Caveats. *The homes that were doused were not occupied.* There was little reaction in the community from the rupture. The reaction would likely have been terror had the homes been occupied. Kinder, Morgan is fortunate that the homes were not occupied. Kinder, Morgan is fortunate that a homeowner was not barbequing a steak when the rupture occurred.

The feeling in the community is that the rupture is more of an issue of pipeline safety, rather than encroachment. The community understands that utilities are proximate and necessary for modern life. With proper testing, I do not believe the thousands of households I represent would be concerned about proximate haz mat pipelines. Of course that feeling would dramatically change were a rupture to occur that caused fatalities.



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