

NATURAL GAS SERVICE OUTAGES IN NEW MEXICO

HEARING BEFORE THE COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE ONE HUNDRED TWELFTH CONGRESS

FIRST SESSION

TO

RECEIVE TESTIMONY REGARDING RECENT NATURAL GAS SERVICE DIS-
RUPTIONS IN NEW MEXICO AND THE RELIABILITY OF REGIONAL EN-
ERGY INFRASTRUCTURE

ALBUQUERQUE, NM, FEBRUARY 21, 2011



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NATURAL GAS SERVICE OUTAGES IN NEW MEXICO

MONDAY, FEBRUARY 21, 2011

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Albuquerque, NM.

The committee met, pursuant to notice, at 10 a.m. in the Vincent E. Griego Chambers, Albuquerque/Bernalillo County Government Center, Concourse Level B, One Civic Plaza, 400 Marquette NW, Albuquerque, New Mexico, Hon. Jeff Bingaman, chairman, presiding.

OPENING STATEMENT OF HON. JEFF BINGAMAN, U.S. SENATOR FROM NEW MEXICO

The CHAIRMAN. Why don't we start the hearing?

Thank you all very much. This is a hearing of the Senate Energy and Natural Resources Committee that we're having in Albuquerque today.

The hearing is devoted to gathering information regarding the natural gas service outages that befell much of New Mexico earlier this month. These outages caused severe hardship for many New Mexico families and businesses. I'd note that we're not far removed from the event that we're talking about which occurred about 2 and a half weeks ago.

Therefore this hearing is not intended or expected to definitely identify the cause or causes of the outage. In fact the events of early February will be examined by a variety of agencies and authorities. These inquiries and analyses will extend across state boundaries and will approach the events from different angles. It's my hope that the record that we create here today will contribute to those efforts and will highlight the questions and issues that need to be addressed.

In addition to our problems in New Mexico there does appear to be a regional character to the events that occurred in early February. Multiple state and Federal authorities are examining service disruptions across Texas and much of the Southwest. With that in mind I'd just like to highlight a few important things.

First, our energy infrastructure and energy markets are highly interconnected. That should be obvious, I'm sure, to all of us. Ensuring the reliability and efficient functioning of that infrastructure is a regional and a national responsibility.

Second, in use utility consumers rely greatly on these energy systems. Ultimately it's these customers who bear the heaviest burden and pay the heaviest costs of long lasting service disruptions.

That's certainly what happened in this case. That's often lost in discussions on national energy policy that we have in Washington. I hope that we can keep a focus on that.

Third, our energy infrastructure plays a critical role in supporting our national defense facilities. Preserving and enhancing the security of that infrastructure and ensuring its reliability needs to be among our highest priorities. We need to ensure that in the future both natural gas and electricity will be reliably available to families and businesses who depend upon them throughout the state.

With that let me particularly thank Senator Udall for being here with me today and Representative Heinrich and Representative Luján for being here to give us their views on this important set of issues. Let me call on Senator Udall for any comments he would like to make before calling on Congressman Heinrich and Congressman Luján.

**STATEMENT OF HON. TOM UDALL, U.S. SENATOR
FROM NEW MEXICO**

Senator UDALL. Thank you. Thank you very much, Senator Bingaman. Thank you for allowing me to participate in this hearing and be involved. I think it's very important that you have done this so quickly and that you have organized this in a way to have panels that I think are really going to get to the bottom of many of the issues that are circulating out there.

This is also the first time since I've been in public with Senator Bingaman since he announced that he wasn't going to run again. I just want to say that he has given incredible public service to New Mexico, dedicated and committed public service. He's a remarkable mentor and friend of mine and colleague. Senator Bingaman, I know that you were never one to want to be hauled out as they say in Washington from the Senate feet first. So you——

The CHAIRMAN. Thank you. Thank you very much.

Senator UDALL. So I just——

[Applause.]

The CHAIRMAN. I'll have plenty of chance to kick me around some more, contrary to what Richard Nixon says.

[Laughter.]

The CHAIRMAN. But thank you at any rate.

Senator UDALL. Thank you. I was going to say that he is going to be here for 2 years and we're going to be working side by side protecting New Mexico. Let's give him another round of applause. I just think for your remarkable service to New Mexico.

[Applause.]

Senator UDALL. Over 28,000 people lost natural gas home heating across our state. These outages range from Silver City to Alamogordo to Bernalillo, Placitas, Española, Dixon, Taos, Questa, and Red River. This happened at a time of record cold temperatures in New Mexico from near zero in the south to 30 below in the north. People lost service early morning Thursday, February 3rd and many were not restored until late Tuesday, February 8th in the coldest northern areas of our State, 5 nights and 6 days without heat.

First New Mexico Gas Company needs to improve their emergency planning, communication and service restoration. The response was unacceptable and New Mexicans deserve better public safety.

We received dozens of calls and emails about burst pipes, loss of water, very cold nights, lost business and wages and disabled people at risk.

After the event my staff and I toured affected areas with local residents and officials along with FEMA, who was evaluating Federal assistance.

We heard from first responders like Aletha Trajheo in Taos, who heads up the Incident Command Center and who informed me that New Mexicans would have been better prepared with more warning time and more information.

Governor Lovato of Ohkay Owingeh Pueblo reported that New Mexico Gas did not work well with them to locate rural pueblo residences.

First responders in Taos, Red River and Questa also reported that the gas company underestimated the time it would take to relight rural residences rather than 10 minutes it would be 30 minutes or as Governor Lovato said in some of the more difficult residences it could be an hour or more.

Second, we need to improve our interstate gas reliability in the southwest. While New Mexico Gas Company should have done better here at home the root cause was across the border. Our testimony here today states that rolling blackouts in Texas caused critical natural gas supply infrastructure in the Permian Basin to fail.

According to the Texas grid operator power generators in Texas failed to provide their committed generation when it was needed the most. Rolling blackouts then resulted without consideration for the impact on gas infrastructure and the impact that would have on New Mexicans. Texas states that its electricity market is intrastate and thus they are exempt from many Federal electricity regulations such as those that require interconnections with other states. This may have been their Achilles heel during this severe winter storm.

Recent reports from Texas show that over 100 power plants went down during the crisis. There are serious questions about whether proper maintenance and winterizations procedures were followed. Unlike New Mexico where electricity rates are regulated, Texas is a deregulated market that allows electricity trading and market pricing.

In 2003, Texas issued a \$210 million fine for manipulating the market during a winter storm which was reduced to \$15 million in a settlement. Just prior to the event in New Mexico, Texas increased the maximum allowable price for power from \$2,250 per megawatt an hour to \$3,000 an hour. One public interest group in Texas, Public Citizen, estimates that electricity trading may have made \$385 million during this incident.

No man is an island. No state except Hawaii is either. Texas and New Mexico need to work together to improve regional reliability. With that, Senator Bingaman, I'm finished with my opening statement. Thank you.

The CHAIRMAN. Thank you very much for your good statement there.

We're in Congressman Heinrich's district here. We welcome him. Why don't you go right ahead.

I know you've been involved in this issue as has Congressman Luján since the crisis first began. Be anxious to hear your perspective on it.

**STATEMENT OF HON. MARTIN HEINRICH, U.S.
REPRESENTATIVE FROM NEW MEXICO**

Mr. HEINRICH. Thank you, Senator Bingaman and Senator Udall, thanks for having us here. It feels like old times to be back in this chamber.

I want to thank you first and foremost for the opportunity to testify before the Senate Energy and Natural Resources Field Committee Hearing today.

I think today's hearing provides us an opportunity to both zero in on what happened during New Mexico's recent gas outage crisis but much more importantly to get to some of those answers so that we make sure this never happens again.

I certainly start by thanking the many New Mexicans who responded to the outage with concern for their neighbors across the State. In one illustration of that effort more than 50 Albuquerque police officers were dispatched in an emergency response team to northern New Mexico to join the National Guard. I spent the day on the phone with the Public Regulation Commission and also with many of the large scale energy users in the central part of the State urging them to take all steps possible to reduce their use.

Like many others across New Mexico my wife and I cut our own use. We spent about 2 days on wood heat at home to reduce the overall demand on our system. Like many others in this room, I would guess, we had the broken pipes to show for it.

Our experience pales in comparison to what my constituents in places like Placitas and Bernalillo went through not to mention what Congressman Luján's constituents went through. It's most likely that the crisis was not the result of one breakdown. We know that.

That being said, there are those who have more to answer than others. Today we need to hear those answers about emergency plans, about steps taken in the face of the storm, the magnitude that we underwent 2 weeks ago. Those answers are critical not for the sake of pointing fingers or assigning blame, but as I said before to make sure that we never experience this kind of disruption again.

The gas outage in New Mexico revealed some key holes in our State's energy reliability, our interstate utility system and the very interruptible nature of our system. We've been told that the problem originated in a disrupted supply from Texas. That those systems also failed because of the extraordinarily cold weather. But that absence of reliability necessitates an examination of the contracts between our utility and their suppliers.

New Mexicans deserve answers about their compressor controls, their reliability and what backup systems exist. Those are signifi-

cant infrastructure inadequacies. New Mexicans across this State deserve answers.

There also remains a lack of clarity concerning the contingency plans that were set in motion. When a crisis of this magnitude happens immediate steps should be taken rather than postponing those steps for the first critical 24 hours. As an entity Albuquerque public schools, for example, is much more difficult to close down in the middle of the day than the evening before or the early morning before school starts in our city. Our constituents deserve information about those contingency plans and when and how they will be activated.

Many New Mexicans are recovering from burst pipes and other consequences incurred from a loss of heat in some cases, as you said, up to 6 days and 5 nights of sub freezing temperatures. Numerous businesses were forced to shutter their doors for the same amount of time. They along with every other New Mexican has every right to have questions answered about corrective measures to eliminate service disruptions due to future weather related emergencies.

New Mexicans deserve to know what early warning signs, contingency measures, decisionmaking processes and emergency communication plans are going to be implemented to prevent this kind of crisis from ever happening again. We deserve to know what back up storage capabilities exist and what strategies there are to keep New Mexico's operating system independent of the failure of suppliers in other States. Those constituents who underwent the harshest consequences of this crisis deserve answers about why the procedures took 6 grueling days to restore heat to their homes.

Crises like this can be devastating. But they also reveal something more powerful in our New Mexico communities. In this instance it was in the collected effort of so many to come to the rescue with shelters, to work toward gas restoration and to turn down their thermostats so that others could stay warm. That concern for one another unites us as New Mexicans. I have no doubt that we will maintain that spirit as we work together toward the steps necessary to, as I said before, make sure this never happens again.

Thank you.

The CHAIRMAN. Thank you very much for your excellent statement.

Congressman Luján, thank you for being here and thank you for your leadership on this issue since the crisis began.

Go right ahead.

STATEMENT OF HON. BEN RAY LUJÁN, U.S. REPRESENTATIVE FROM NEW MEXICO

Mr. LUJÁN. Mr. Chairman, thank you and Senator Udall, thank you for allowing us to be here.

Chairman Bingaman for your leadership and hard work on behalf of New Mexico, our State and Nation are better for your service and we thank you very much, not only for holding this important hearing to determine what caused catastrophic natural gas outages throughout New Mexico leaving our communities without heat, families vulnerable during record low temperatures.

I want to thank all of those who came together as a community to do their part to help New Mexico endure this crisis whether it was volunteering at shelters, checking on an elderly neighbor to make sure that they had everything they needed to get through the night or turning down the thermostat to conserve gas.

I want to thank all of those at our national laboratories for their help as well for modeling, reducing their energy consumption, to providing support to those that needed to get back to their homes to get their heat on. The tremendous efforts I saw firsthand, efforts by so many in the community during this challenging time are a testament to the resiliency of the people of New Mexico. Many of these homes and businesses are in my northern New Mexico district, mainly those that were last to be turned on.

This hearing is an important first step to ask the tough questions that will allow us to identify and fix problems that led to the outages so that New Mexicans never have to face this again. At a time when many regions of the country were experiencing freezing temperatures the increased demand for natural gas in New Mexico and the additional strain on the system in Texas should not have come to a surprise to anyone.

We need to know why natural gas was cutoff to entire regions of New Mexico.

To what extent these problems were caused by a shortage of supply verses failed or compromised distribution infrastructure.

How decisions were made to distribute or cutoff natural gas available in the pipeline or storage facilities to customers in New Mexico, Texas, Arizona and California.

How are winners and losers determined?

One item mentioned by a local news outlet and I quote, One interesting fact presented was not questioned. The decision to shut the auto-e valve made was made before the company contacted public service company of New Mexico to request that the Cobisa Power Plant, south of Rio Bravo, be switched to oil. We needed to get blocks of 10,000 dekatherms shut off quickly.

The gas company said the auto-e valve supplies 20,000 dekatherms and services the northern communities of Española, Taos, Questa, Angel Fire and Red River. He said the Cobisa demand is 17 to 20,000 dekatherms. The Cobisa Plant produces electricity exported to California.

Why was there not better communication and coordination both in and out of New Mexico? Decisions were made to cutoff entire communities putting families at risk. It seems clear that decisions made by Texas utility entities did impact New Mexicans.

What can be done to ensure that backup power is available at natural gas compression stations or to include compression stations that are critical to natural gas deliverability to New Mexico and other western States as essential before electricity interruption?

Were necessary actions and communications taken by the utilities responsible for deliverability of electricity and natural gas to prevent cutting off natural gas to families and entire communities?

Early in the crisis I sent a letter to the Federal Energy Regulatory Commission requesting review of the natural gas outage. I am pleased that FERC is beginning its inquiry. I look forward to their findings.

Furthermore, it's my hope that this hearing sheds light on what went into the decision to shut off natural gas to these vulnerable communities in New Mexico, many in areas where the coldest temperatures were felt including options evaluated before they were shut off. I am concerned that the New Mexico Gas Company did not have a sufficient plan in place to communicate with impacted communities including tribes, small businesses, government entities, but especially families. This event reminds us of the interdependence throughout our infrastructure system and the need to identify the vulnerable communities that face a similar threat.

During this ordeal I had constituents talk to me in tears. Worried about how they would make it through the night and how long they would be without heat and water. They were scared.

I heard from an elderly man who got sick from enduring night after night in the cold because he was told the only way heat would be turned on was if someone was home. Now he has additional medical costs. Other seniors had to stretch their social security checks to purchase electric heaters. Now face skyrocketing electric bills that they will receive in the near future, an infrastructure that's been compromised.

While I appreciate the hearing today on the causes of the gas outage, I want to take a moment to remind our constituents that my office is here to offer any support we can and help them navigate the process of obtaining available resources as they work to fix broken pipes, make costly repairs and pick up the pieces in the aftermath of the crisis.

Again Chairman Bingaman, a sincere thank you for bringing this field hearing to New Mexico to get answers for so many here in New Mexico. Thank you.

The CHAIRMAN. Thank you very much for your excellent statement as well.

Of course, we also invited Congressman Pearce to be here if he was able. He was not able to be here, but he had another scheduling commitment. But he asked if a statement by him could be put in the record. Of course we will do that following the statements that Congressman Heinrich and Congressman Luján have just given.

[The prepared statement of Mr. Pearce follows:]

PREPARED STATEMENT OF HON. STEVAN PIERCE, U.S. REPRESENTATIVE
FROM NEW MEXICO

Chairman Bingaman, thank you for holding this hearing to ask the important questions of natural gas operators. I ask that my statement be submitted into the official record. Like you, I hope to determine just where the system broke down and what operational actions our natural gas providers must take to avoid another system-wide breakdown in the future.

Early this month, New Mexico was transformed by snow and sub-freezing temperatures. Exceptionally low temperatures and lack of wind stopped wind turbines from generating energy, resulting in rolling blackouts on the Texas power grid. Across state lines, subzero temperatures froze gas wellheads. This, combined with increasing demand for natural gas, lowered pressure in transmission pipes. The pre-packed transmission lines were no match for the cumulative effects of subzero temperatures, idle turbines and rolling blackouts in Texas, frozen wellheads, increased demand, and low pressure in the natural gas pipeline system.

Now, the studies have begun, and investigations have started. It could be years before official decisions are handed down, but the New Mexicans who lived through the shortage firsthand demand solutions. Now is the time to ask tough questions

and find thoughtful answers that can lead to the strategic changes needed to avoid this sort of crisis in the future.

I am pleased that those New Mexico communities hit the hardest by the cold are represented here today, as well as the natural gas providers and their regulators. I use the term “regulator,” loosely, as the bulk of the Texas wind corridor operates largely “off-grid.” Furthermore, the delivery system to New Mexico is so closely intertwined with the Texas market that a blackout in Texas, as we learned this month, has staggering results in Southern New Mexico. If there is one thing I hope you take away from this hearing, it is that we need more planning and better communication between Texas, New Mexico and the other states that are dependent on the Texas delivery system.

I have heard the term “perfect storm” used to describe what we in New Mexico experienced. A once-in-50-year storm knocked out 82 power plants in Texas. Freezing temperatures suspended equipment and shut down gas compression stations, reducing pressure in the pipelines. Like a blocked artery, the movement of natural gas slowed to a dribble. At the same time, the freezing weather increased demand. With the Southwest’s abundant supply of natural gas blocked, we faced an unprecedented shortage. Supply could have remained steady—we had the natural gas, but the pressure was missing.

I acknowledge the quick actions taken by the major natural gas providers who prepared and targeted resources to combat the approaching weather. In a briefing from the New Mexico Gas Company (NMGC), they believed that “its system was fully capable of meeting the increased demand. However, it could not have anticipated that gas delivery from Texas would be significantly reduced and gas production in the San Juan and Permian basins would be so severely impacted.” NMGC was tracking the weather, and made several significant preparations for this extraordinary storm. The front-end preparations had been made. But on the back-end, NMGC was crippled by powerless gas processing plants and frozen wellheads, all owned by other entities.

While we cannot control the weather, there must be certainty when it comes to preparation and response. Adequate planning and communication by gas service providers and the Texas power delivery players will enable us to prevent system-wide lockdown of the natural gas transmission chain. While we do not know when, it is inevitable that New Mexico will face another episode of freezing weather. Today, let us prepare for tomorrow’s storm. To find solutions, we must ask questions, and I look forward to hearing from the panel on the following:

To the gas service providers, electric companies, processing plants, and wellhead operators:

- My constituents have described their living conditions during the outage as “third-world.” How will they be compensated for their losses and expenses? What steps have you taken to repair damage to homes and businesses?
- I note that a “compensation fund” has been established. Have all providers contributed? If not, why? What is the process for one to receive compensation? What measures are in place to ensure that New Mexican’s are compensated fairly and quickly?
- How are you preparing for the next 50-year-storm so that natural gas is delivered to the people of New Mexico during freezing and sub-zero temperatures?
- What new preparations have you already implemented?

To the regulators:

- How should this experience change energy policy moving forward? How should this storm change the way we react to outages in the future?
- The Texas power grid is heavily reliant on alternative energy. Would the same disruption in service have occurred if that state’s energy system was less reliant on alternative wind power as opposed to clean coal, nuclear or other forms of traditional electricity generation?
- Why did the Texas energy corridor implement a rolling blackout plan in place of strategic power grid controls that would not have severed natural gas delivery? What alternatives are available in place of the traditional “rolling blackout” approach? What are the obstacles that prevent this from being in place?

The CHAIRMAN. So thank you both very much for being here.

Let me also acknowledge that Jason Marks from the Public Regulation Commission is in the audience. We very much appreciate his being here today. He has a very important role in trying to get

to the bottom of this and putting in place policies to avoid this in the future. We want to acknowledge that.

We have 10 witnesses today. We've broken it into Panel One and Panel Two. Why don't we have the folks in Panel One come forward right now.

That's the Honorable Walter Dasheno, who is the Governor of Pueblo of Santa Clara.

The Honorable Alice Lucero, who is the Mayor of Española.

The Honorable Jack Torres, who is Mayor of Bernalillo.

Mr. Steve Fuhlendorf, who is the Chief Executive Officer with the Taos County Chamber of Commerce.

We have all of these individuals to speak to the issues as they experienced this problem in their own communities and thoughts they have about what needs to be done to avoid this in the future and to deal with the aftermath.

Why don't we start with Governor Dasheno, who is here not only representing, as I understand it, the Pueblo of Santa Clara, but also the Pueblos in northern New Mexico? Is that correct?

Mr. DASHENO. Yes, Senator, that's correct.

The CHAIRMAN. Alright. Why don't you go ahead first and then after that I'll call on the others on the panel.

STATEMENT OF HON. WALTER DASHENO, GOVERNOR, PUEBLO OF SANTA CLARA, NM

Mr. DASHENO. First of all, thank you very much, Senator Bingaman for this opportunity to present our testimony.

Senator Udall, Congressman Heinrich and Congressman Luján, thank you for this opportunity to come before all of you to address our concerns that we have this morning.

Thank you Senator Bingaman for the opportunity to testify before you on the natural gas outage that occurred here in New Mexico earlier this month during a period of some of the coldest weather in our State's recent history.

Additionally I also wish to thank Senator Udall, Congressman Luján and Congressman Heinrich for their support and presence at this hearing today.

My comments are directed to the magnitude of this calamity, the wide variety of measures implemented by Santa Clara to deal with it and our suggestions going forward.

The Pueblo of Santa Clara is a federally recognized Indian tribe situated in northern New Mexico where much of the gas outage occurred. The outage affected my pueblo beginning on Thursday, February 3rd and ended with the restoration of natural gases to the homes of tribal members in the Lamacita area on Monday evening, February 7th. There are 600 pueblo member households and over 12,000 non-member households in what we refer to as the exterior boundaries of the Santa Clara reservation. Which reservations run from the northern area of Fierro to the western area of La Loma in Española, the southern area to San Ildefonso Pueblo and La Mesilla and the eastern boundary run into areas of San Brio, San Pedro, Santa Cruz and Riverside, New Mexico.

It is our understanding that the outage was caused by the loss of power at a compressor located in Texas which was followed by decisions made by the New Mexico Gas Company to cut service on

some, but not all, natural gas transmission lines in the State. As a result the decisions made by the New Mexico Gas Company the burden of the cutoff was shifted to and borne by people less able to bear the cost of it, tribes and the poor communities throughout the State. In northern New Mexico our Pueblo and the Pueblos of Taos, Ohkay Owingeh and San Ildefonso and many communities located from San Ildefonso in north of Questa and to the south the communities of Bernalillo, parts of Santa Anna and Zuni were cut-off while Santa Fe, Los Alamos, Albuquerque and Rio Rancho were not cutoff.

We were informed of the outage during a tribal council meeting. But the council was not made aware of its true impact at that time. We found out later that the outage was not—only be resolved within 8 hours.

We immediately took steps to address the problems caused by the outage, but were unable to entirely insulate the community, its residents or our businesses from the consequences of the outage. The consequences for our people and other residents of the area were severe. Many families were completely without heat in their homes and were unable to cook on their gas fired stoves.

Many homes, businesses and offices had water lines freeze and burst.

Businesses including the Pueblo of Santa Clara hotel, Santa Clarion hotel and casino in other areas experienced significant interruptions that caused substantial financial losses.

Governmental offices including but all of the most essential of the Pueblo offices had to shut down causing a major interruption of vitally needed services to our people because of the complexities of re-pressurizing the natural gas lines. Moreover it took several days to restore service.

Santa Clara has had more than its share of experiences with emergency situations having sustained major losses in the Oso complex fire in 1998 and the disastrous zero ground fire in 2000. For that reason we have developed protocols for emergency preparedness that we think serve as well in this instance. I would like to summarize the measures that we were able to put into place as soon as we had word of the gas outage and some of which continued right up through February the tenth.

We immediately turned our Youth/Senior Citizen center into an emergency shelter for our people who needed assistance. The center was staffed 24 hours a day with approximately 30 to 50 Pueblo employees. We served 3 hot meals a day at the Senior Citizen center serving 150 to 200 persons at each meal.

Our community health representative worked around the clock conducting daily visits and sometimes several visits per day to approximately 300 of our elders and handicap members who were unable to come to the senior center and took meals to many of these persons.

We provided blankets to those who needed them. We were able to obtain shipments of electric heaters totaling at least 300 from Las Vegas and Albuquerque, New Mexico and as far away as Phoenix, Arizona that we distributed to persons who lacked other heating resources.

For those who had wood stoves and fireplaces the tribe distributed approximately 210 cords of firewood.

We brought in 3 contract plumbers who were employed full time for a week to go house to house addressing individual plumbing and heating problems.

Throughout the crisis we maintained a fully staffed emergency operation center that was in constant communication with all of our various tribal agencies engaging emergency services.

Our tribal police department brought in 3 additional officers and kept the full force on overtime to help handle the situation.

As a result of these efforts we believe that the impact of the Santa Clara members, although severe, was considerably less than it could have been. We are proud of the way in which our staff rose to the occasion and those that were in need of assistance. But this effort was very costly and came at a time when the Pueblo has been undergoing some major financial stress. We are still trying to determine the full cost undertaken while we currently estimate that we spent more than \$100,000 on the services that I have described and there are some items of damage such as cracked pumps on our fire engines, the cost of which have not yet been determined.

Additionally the Santa Clara Development Corporation, a wholly owned economic development entity has estimated that it incurred added cost and lost revenue in its various entities including the Santa Clara hotel, the Big Rock Casino, the Puye Travel Center and others of approximately \$265,000. That results in net loss to the Pueblo in itself of that amount. As that amount comes off to the corporation's bottom line and thus directly reduces the revenues that would otherwise be paid to the Pueblo.

We at Santa Clara very much want to be a part of the process to develop preparedness on the part of our communities so that if the unthinkable should occur, the lifeboats are in place and sufficient to save all those affected. We think we have much to offer that process. I'm sure there is much we could learn as well that would improve our own response.

We specifically propose the following suggestions.

One, preventative measures need to be in place so that this disaster never happens again. Auxiliary power supplies ought to be required at all compressor stations. The New Mexico Gas Company should be required to devise pipeline interconnections to provide backup supply while pressure fails in a segmented system.

Two, poor communities should not bear the full brunt of any cutoff. The New Mexico Gas Company made the decision on its own as to which areas would get cutoff when pressure began to fall in the system. They should not have such direct discretion.

B, there ought to be some agreed on plan perhaps approved by the New Mexico Public Regulation Commission as to how much decisions are made and how to notify affected users in a timely manner and including advance notice to governmental and social service agencies. The plan, moreover, ought to take into account the relative disabilities of different areas to bear the cost and the burden of gas cutoff.

Three, improve the efficiency of procedures for bringing areas that have been cutoff back into service. In tribal communities in-

cluding and involving tribal governments could improve communication.

B, technicians apparently went from house to house in some arbitrary numerical sequence rather than simply going door to door which would have been quite faster. There should be some public discussion and approved protocol in place for gas service restoration.

Four, Congressional funds to assist Pueblo and other people and business damage by the outage. Many people suffered serious damage by way of broken pipes, interrupted business and others that should be compensated. The New Mexico Gas Company is providing \$1 million but that may be insufficient to cover all of them at this point. Congress can provide funds to assist such people and businesses.

Five, Federal grants to tribes and other entities to research alternative energy sources. This would be a good occasion to institute a program of moderate sized grants to find alternative energy sources in order to reduce impacts of any future outage.

Senator Bingaman, we hope that this type of incident will never be repeated. While it is too early to say with any assurance, we suspect that pending inquiries may well show that this incident could have been avoided had appropriate preventative measures been in place. We look forward to Federal support to implement any such preventative measures.

Thank you on behalf of the Pueblos of Santa Clara, Ohkay Owingeh, San Ildefonso and Taos Pueblo, Santa Anna and Zia Pueblo.

Thank you for this opportunity to present our views.

[Native American language spoken.]

[The prepared statement of Mr. Dasheno follows:]

PREPARED STATEMENT OF HON. WALTER DASHENO, GOVERNOR, PUEBLO
OF SANTA CLARA, NM

Thank you Senator Bingaman, for the opportunity to testify before you on the natural gas outage that occurred here in New Mexico earlier this month, during a period of some of the coldest weather in our state's recent history. Additionally, I also wish to thank Senator Udall, Congressman Lujan and Congressman Heinrich for their support and presence at this hearing today.

My comments are directed to the magnitude of this calamity, the wide variety of measures implemented by Santa Clara Pueblo to deal with it, and our suggestions going forward.

The Pueblo of Santa Clara is a federally recognized Indian tribe situated in Northern New Mexico, where much of the gas outage occurred. The outage affected my Pueblo beginning on Thursday, February 3rd and ending, with the restoration of natural gas to the homes of Tribal Members in the La Mesilla area, on Monday evening, February 7th. There are 600 Pueblo-member households and over 12,000 non-member households in what we refer as the exterior boundaries of the Santa Clara Reservation, which boundaries run from the northern area of Fairview to the western area of the La Loma and Española, the southern area to San Ildefonso Pueblo and La Mesilla, and the eastern boundary running in the areas of Sombrello, San Pedro, Santa Cruz, and Riverside. New Mexico.

It is our understanding that the outage was caused by the loss of power at a compressor located in Texas, which was followed by decisions made by the New Mexico Gas Company ("NMGC") to cut service on some, but not all, natural gas transmission lines in the state. As the result of the decisions made by NMGC, the burden of the cut-off was shifted to and borne by people least able to bear the costs of it—tribes and poorer communities throughout the state. In northern New Mexico, our Pueblo, and the Pueblos of Taos, Ohkay Owingeh, and San Ildefonso, and many communities located from San Ildefonso north to Questa and to the south the com-

munities of Bernalillo, parts of Santa Ana and Zia were cut off, while Santa Fe and Los Alamos, Albuquerque, and Rio Rancho were not cut-off.

We were informed of the outage during a Tribal Council meeting, but the Council was not made aware of its true impact at that time. We found out later that the outage would not be resolved within eight hours. We immediately took steps to address the problems caused by the outage, but were unable to entirely insulate the community, its residents, or our businesses from the consequences of the outage.

The consequences for our people and other residents of this area were severe. Many families were completely without heat in their homes and were unable to cook on their gas-fired stoves. Many homes, businesses and offices had water lines freeze and burst. Businesses, including our Pueblo's Santa Clara Hotel and Casino and hotel, experienced significant interruptions that caused substantial financial losses. Governmental offices, including all but the most essential of the Pueblos offices, had to shut down, causing a major interruption of vitally needed services to our people. Because of the complexities of re-pressurizing the natural gas lines, moreover, it took several days to restore service.

Santa Clara has had more than its share of experiences with emergency situations, having sustained major losses in the Oso Complex Fire in 1998, and the disastrous Cerro Grande Fire in 2000, and for that reason we have developed protocols for emergency preparedness that, we think, served us well in this instance. I would like to summarize the measures that we were able to put into place as soon as we had word of the gas outage, and some of which continued right up through February 10th:

- We immediately turned our new senior center into an emergency shelter for people who needed assistance, and the center was staffed 24 hours/day by approximately 30 to 50 tribal employees.
- We served three hot meals a day at the senior center, serving 150-200 persons at each meal.
- Our Community Health Representatives worked around the clock, conducting daily visits (and sometime several visits per day) to approximately 300 of our elders and handicapped members who were unable to come to the senior center, and took meals to many of those persons.
- We provided blankets to those who needed them, and we were able to obtain shipments of electric heaters, totaling at least 300 in all, from Las Vegas and Albuquerque, New Mexico, and as far away as Phoenix, Arizona, that we distributed to persons who lacked other heat sources.
- For those who had wood stoves and fireplaces, the tribe distributed approximately 210 cords of firewood.
- We brought in 3 contract plumbers, who were employed full-time for a week, to go house to house, addressing individual plumbing and heating problems.
- Throughout the crisis, we maintained a fully staffed emergency operations center that was in constant communication with all of our various tribal agencies engaged in emergency services.
- Our tribal police department brought in three additional officers and kept the full force on overtime, to help handle the situation.

As a result of these efforts, we believe that the impact of the outage on Santa Clara members, although severe, was considerably less than it could have been, and we are very proud of the way in which our staff rose to the occasion and helped those in need of assistance.

But this effort was very costly, and came at a time when the Pueblo has been undergoing some major financial stress. We are still trying to determine the full cost of the undertaking, but we currently estimate that we spent more than \$100,000 on the services I have described. And there are some items of damage, such as a cracked pump on one of our fire engines, the cost of which has not yet been determined.

Additionally, Santa Clara Development Corporation, our wholly owned economic development entity, has estimated that it incurred added costs and lost revenues in its various entities, including the Santa (Ivan) Hotel, the Big Rock Casino, the Puye Travel Center and others, of approximately \$265,000. That results in a net loss to the Pueblo itself of that amount, as that amount comes off of the corporation's bottom line, and thus directly reduces the revenues that would otherwise be paid to the Pueblo.

We at Santa Clara very much want to be a part of a process to develop preparedness on the part of all of our communities, so that if the unthinkable should occur, the lifeboats are in place and sufficient to save all who are affected. We think we have much to offer that process, and I am sure there is much we could learn as well, that would improve our own response.

We specifically propose the following suggestions:

1. Preventive measures need to be in place so that this disaster never happens again.
 - a. Auxiliary power supplies ought to be required at all compressor stations.
 - b. NMGC should be required to devise pipeline interconnections to provide back-up supply when pressure fails in a segment of the system.
2. Poor communities should not bear the brunt of a cut-off.
 - a. NMGC made decisions on its own as to which areas would get cut off, when pressure began to fall in the system. They should not have such discretion.
 - b. There ought to be some agreed-on plan, perhaps approved by the New Mexico Public Regulation Commission, as to how such decisions are made, and how to notify affected users in a timely manner, and including advance notice to governmental and social service agencies. The plan moreover ought to take into account the relative abilities of different areas to bear the cost and the burden of gas cut-offs.
3. Improve the efficiency of procedures for bringing areas that have been cut off back into service.
 - a. In tribal communities, involving tribal governments could improve communication.
 - b. Technicians apparently went to houses in some arbitrary numerical sequence, rather than simply going door to door, which would have been faster.
 - c. There should be a publicly discussed and approved protocol in place for gas service restoration.
4. Congressional funds to assist people and businesses damaged by the outage.
 - a. Many people suffered serious damage, by way of broken pipes, interrupted businesses, and others, that should be compensated. NMGC's \$1 million fund may be insufficient to cover them all.
 - b. Can Congress provide funds to assist such people and businesses?
5. Federal grants to tribes and other entities to research alternative energy sources.
 - a. This would be a good occasion to institute a program of modest-sized grants to fund alternative energy sources in order to reduce the impacts of any future outage.

We hope that this type of incident will never be repeated, and while it is too early to say with any assurance, we suspect that pending inquiries may well show that this incident could have been avoided, had appropriate preventive measures been in place. We look forward to federal support to implement any such preventive measures.

Thank you for the opportunity to present our views.

The CHAIRMAN. Governor, thank you very much for your statement, your excellent statement there. We appreciate it. Before we ask any questions of any of the panel let me call on the other panel members for any statement they have.

Mayor Lucero, why don't you go ahead next?

STATEMENT OF HON. ALICE LUCERO, MAYOR OF ESPAÑOLA, ESPAÑOLA, NM

Ms. LUCERO. Senator Bingaman, Senator Udall, Congressmen Luján and Heinrich, thank you for allowing me to testify before you today on behalf of the people of the Española Valley.

On the morning of Thursday, February third, we were notified by New Mexico Gas that natural gas was going to be shut down to our city for a period of between 2 hours to 2 days. By the time we were informed valves supplying natural gas to our area had already

been shut off. Two hours later approximately 11,000 households and businesses within the Española Valley were without service for 5 days, some up to 7 days, others still who experienced damages were without service for a longer period.

This took place during an Arctic storm when temperatures dropped below zero. In the village of Questa temperatures dipped to 28 degrees below zero. New Mexico Gas made a decision to shut off the valve that serviced northern cities, towns, counties and pueblos. These are some of the coldest communities in the State, communities that pay large amounts to New Mexico Gas to heat their homes each winter.

The city of Española had an immediate staff meeting to engage an emergency preparedness plan. We took preventive measures to prepare our facilities and coordinated with the Red Cross to establish an emergency shelter. With the cooperation of Rio Arriba County we established an emergency operation center.

The Red Cross and the National Guard manned the shelter while the Española public schools, several businesses and restaurants provided food and water. We housed 10 to 21 persons each night. People who could not cook at home came to eat at the shelter. We also fed volunteers, police and fire personnel. Additionally some meals were taken to homes where there were elderly that could not come out.

The governing body declared an emergency so that we could procure materials needed to prepare our facilities. We ensured that our water wells and waste water treatment plant continued to operate. The costs thus far incurred by the city were approximately \$45,000 plus over \$16,000 in overtime pay.

Due to the slow economy revenues have been declining. Businesses shut down from 5 to 7 days will have an adverse impact on our gross receipts revenue. Additionally there were hundreds of employees of these businesses who were unable to work thus experiencing a loss of income to support their families.

Many of our residents are elderly and poor. Some wouldn't leave their homes. They huddled in their beds with electric blankets, if they could afford them. Others were cared for by family members.

Electric heaters were used non-stop which will cause an increase in electric utility bills. Many are on fixed incomes and cannot afford the repairs that need to be made to their homes due to damages. Some of our elderly became ill. One suffered frostbite on her toes. Some of the poor who had to seek medical help do not have health insurance and cannot afford the medical bills that they incurred.

We had several fires within the Española Valley. One individual is now homeless. Other families have been displaced. These are poor people who in many cases do not have home insurance and cannot afford the cost of repairs.

We learned that New Mexico Gas did not have an effective emergency preparedness plan. They had problems communication with the affected areas. We were not given adequate notice of the loss of service. The question as to why these communities in the north were selected has not been satisfactorily answered. The complexity of rural areas did not seem to be considered.

Respectfully we request that you require energy distributors such as New Mexico Gas to implement effective plans to provide for these types of emergencies. New Mexico Gas failed us. They need to be held accountable and pay for damages. We look to you to establish policies that require them to prevent this type of crisis in the future.

Last year because of funding provided by the American Recovery and Reinvestment Act the city of Española was able to retrofit city hall with a geothermal energy system to provide heat and air conditioning. This facility was the only facility in the entire Española Valley that had heat during this crisis. Thank you for providing these funds that made it possible for us to take advantage of an alternative energy source.

We urge you to invest in alternative sources of energy.

We ask that you fund programs to retrofit facilities with geothermal or solar energy that is abundant in our area.

Grants should be made available to low income families, the elderly and the disabled for the purpose of converting their systems to an alternative energy source.

Alternative energy sources in facilities and homes will free Americans from being solely dependent on natural gas.

In closing I want to express our appreciation to you, Senator Bingaman for holding this hearing in New Mexico and for listening to us, allowing us to inform you how this affected each of our communities. Thank you.

The CHAIRMAN. Thank you very much for your statement.

Mayor Torres, why don't you go right ahead?

STATEMENT OF HON. JACK TORRES, MAYOR OF BERNALILLO, BERNALILLO, NM

Mr. TORRES. Thank you, Senator.

Chairman Bingaman, Senator Udall, Congressman Heinrich, Congressman Luján, I also appreciate the opportunity to be before you and testify. Probably the greatest challenge I have right now is taking the 4 or 5 days that we went through and trying to condense a report or testimony into 5 minutes. But I'll do my best to highlight

Again I want to thank you for this opportunity and just state that we still need your help. The crisis really isn't over for any of our communities. I'll start with Thursday, February third and really focus on the communication issues or problems that the Town of Bernalillo had from the onset with New Mexico Gas Company.

We received a call approximately 8:15 essentially notifying us that the gas to the community was shut off. Again, there was no prior notification. It was essentially you have no gas.

At that point we got no explanation of the cause. No estimate of restoration times nor a contact person or phone number that we could get in touch with with our questions as this process unfolded. Again essentially what we heard was, your natural gas has been shut off to your community.

Our frustration began with a lack of communication.

Who were we to speak to?

Who could we ask questions of?

Could we get any sort of clarification?

I have to publicly thank Mayor Berry of the city of Albuquerque who I called in a bit of panic saying do you have someone that I might be able to speak to. Thankfully he was able to get me a phone number because up until that point all we got was voice mail. We needed someone to speak to. We needed some answers.

As with everyone else we were stunned, especially in retrospect at the lack of any apparent emergency response plan from New Mexico Gas Company. Just to reiterate, we were told gas was shut off and that was basically it at the beginning. We were left to fend for ourselves.

The critical questions that we have and still have is why was there no advance warning to municipalities or to the State of New Mexico?

Why weren't there established clear lines of communication?

Why wasn't there any plan for dealing with the response?

Again as we were left to fend for ourselves we went to work quickly. We established our emergency command center utilizing Town of Bernalillo staff. Put together everything we needed to begin addressing the emergency. We had coordination with the Sandoval County emergency command, support of the Red Cross, New Mexico National Guard.

I also want to thank the delegation for their calls of concern and offer of support because we weren't getting that from New Mexico Gas to be candid. I also want to commend the Town of Bernalillo staff for their professional efficient response and actions taken to address the issue locally. We were on our own. We did what we needed to do.

We mobilized all of our staff to first deal with the most vulnerable citizens in our community and make sure that they were taken care of and weren't at too much risk. As in probably most communities, most of our seniors chose to stay in their homes. They didn't want to leave their homes. But we did everything we could to make sure they were safe and not at too much risk.

Again we coordinated services with the Sandoval Senior Program, our police and fire department and workers from every single one of our departments assisted. We also had to handle hundreds of phone inquiries because people didn't know what was going on. They didn't know what to expect. We did our best to try to put them at ease and give them whatever limited information that we had available to us.

The positive side in our communities, as I think in each of our communities, were the people stepping forward. We had private citizens that came to city hall and said, How can I help?" We put them to work.

We had neighboring communities such as Sandoval County, New Mexico National Guard, the city of Albuquerque and Mayor Berry who stepped up and offered their support as well. Local businesses went out of their way to donate or offer any help that they could. Again, we heard calls of support from all of you.

I also want to commend Governor Martinez for actually calling me back. I didn't expect that to happen. But I called her office looking for support, looking for action. I say that I didn't expect her to call me back.

The Senator is smiling at me. I don't mean that facetiously I just assume with everything she must be dealing with that we might be a little bit low on her priority list. But she actually called back, offered support and assistance. I appreciate that.

Secretary of Homeland Security Michael Duvall also contacted me and kept in communication throughout the crisis. We appreciate that support. He set up a meeting for myself with the Governor at 7:15 that first day, Thursday evening. Actually unawares to me a VP from New Mexico Gas Company attended as well.

Throughout the day all we had heard was that it was a complex issue because we wanted to know why we were chosen. We even heard that it was a matter of simple physics. It was our location on the transmission line. At that meeting about 7:30 for the first time we heard from New Mexico Gas Company the words that our community was chosen to be shut off.

Our interaction with New Mexico Gas Company. Day one essentially the issue was our gas service was off. Through the day we were told that it was simply a matter of our location on the transmission line until the end of the day, as I noted. We had our communications established through the assistance of Mayor Berry. However my frustration increased through the day and through this process because information, answers to our questions remained vague. The answers to the questions constantly changed. Frankly I felt like I was in a war zone and had to insist, demand or beg for any sort of response for my community.

I really feel that was understandable at the onset, but the pattern of pure communication has just continued up until this point. Just a quick example, when we were talking about the re-light process which was underestimated in our community. I was told personally that there were 400 to 500 technicians. About an hour later I was told that that number would be 25 technicians. When I questioned the first response, I was told I had misunderstood what was told to me.

At that point I was angry, disappointed, frustrated and again, felt like I was in a war zone and had to negotiate and do everything I possibly could to protect my community. Eventually was told we'd have about 100 technicians. I think the actual number ended up being about 80.

The town offered staff to assist with the re-light, not to re-light pilots or turn on meters, but to act as guides because Bernalillo is an old community that's not in a simple grid or a logical grid. There's a lot of dead ends. There's a lot of roads where you wouldn't expect roads. But we were told that that was not necessary and were turned down.

The process took longer than anticipated. Most of the community was eventually restored by Sunday, late PM. Many homes were missed through the process for some reason. Again, we simply feel that our offer was turned down and could have helped the process go much smoother.

We have no confidence in New Mexico Gas Company partially due to the shut off, but more so due to the poor communication which has worsened throughout the crisis. We could not get reliable information. Frankly, worse than the lack of reliable informa-

tion has been what I think is a stunning attitude toward my community.

Initially I naively believed that I could accept what I was told as truth and repeatedly answered changed. Again, I felt like I had to question every response and fight for every concession I could for my community so Bernalillo would not continuously be overlooked, set as a low priority or repeatedly abused. I was talked down to by their staff, chastised and even verbally berated.

I felt their attitude toward the Town of Bernalillo was condescending and aggressive at times. I felt as if I was seen as overbearing and a burden to them. Our town was stepped on by New Mexico Gas Company. I strongly believe that if I had not done my job as Mayor that we would have fared even worse.

I am hopeful that this Committee can help us get to the truth and get complete answers. At one point the CEO from New Mexico Gas agreed to a meeting with my town council to address our unanswered questions. Shortly after that I was told by their council that there would be no public meeting, no meeting with my council.

We were offered a compromise meeting which included a number of mayors. We were allowed one guest, no public, no press. That was at their insistence contrary to our desire to have a public meeting to address issues openly and with people hearing all the answers.

Questions that we have, have had for some time, that remain are why was our community chosen and what were the other options that were available? For instance, who else could have been chosen and would have that made more sense?

When and if the next crisis arises will we be chosen again? We have asked that question but not received a satisfactory answer and hope that you can help us with that.

We've asked and still not received details on their claims process perhaps that will come in a few minutes. Our offer to house one of their staff or more of their staff at our city hall to help people has been declined. Several communities, as we've been told recently, were chosen to save the balance of the system, the balance of the State. It seems that there should be some recompense to those communities that were chosen.

We've heard about individual suffering, the same thing in my community, financial burdens. People trying to buy whatever they could to keep their homes safe, to keep themselves safe, frozen pipes. Businesses that were forced to close in my community, primarily small businesses, no receipts for those days they were closed, staff sent home with no pay and again the lower gross receipts to our community.

Bernalillo public school suffered significant damage. The most recent estimate I heard is in the hundreds of thousands of dollars. Town of Bernalillo had staff overtime, additional expenditures, loss of gross receipts and actually we were fortunate there were only a few fires that were quickly extinguished.

I'm also worried and in a cynical way about what my next gas bill will look like. Will I be paying and my constituents paying and our constituents paying for the gas that was purged from the lines? I would have never believed to ask that question before this crisis, but I have to ask it today.

I'll close by repeating some of the words of the CEO of the parent company of New Mexico Gas, who at our meeting last week stated, "There was no gas shortage." I almost died when I heard those words. I suppose technically that's accurate. But I really feel that that's symbolic of what we've heard from the gas company. I think it's a manipulation of language and a technical interpretation of the facts. I would ask him if he would go through each of our communities and tell each of the people impacted that there was no gas shortage.

I began by stating that we still need your help. We certainly do. I hope that I've provided a glimpse of what our community has gone through and continues to go through. I certainly offer the Town of Bernalillo support in any way that we can so we can get clear, complete and honest answers to all these issues that remain.

Thank you, sir.

The CHAIRMAN. Thank you for your excellent statement.

Our final witness in this panel is Mr. Steve Fuhlendorf, who is the Chief Executive Officer with Taos County Chamber of Commerce. Steve, why don't you go ahead?

STATEMENT OF STEVE FUHLENDORF, CHIEF EXECUTIVE OFFICER, TAOS COUNTY CHAMBER OF COMMERCE

Mr. FUHLENDORF. Thank you, Senator Bingaman and Senator Udall, Congressman Heinrich, Congressman Udall—Congressman Luján, thank you all for having us here and to talk to the Energy and Natural Resources Committee.

I'm going to provide a little bit of a different perspective on the gas outage as I'm representing the business community in Taos County. We, just to set the stage a little bit for the situation that arose a couple of weeks ago.

First of all Taos is about twice the national average on entrepreneurial businesses. I think this is certainly to be applauded on our business community. However it also puts a lot of businesses in a vulnerable position. They've been put in a vulnerable position over the last couple of years because according to economic reports that we produce on a quarterly basis through the Taos County Chamber of Commerce.

The recession actually started in Taos County in 2007. So the recession started earlier as defined by 2 consecutive quarters of downward numbers in economic development. What this has put us in a position is that these entrepreneurial businesses have essentially gone through their resources.

Mom and Pop owned this store. They hire someone to run the store for them. As the economy started to slide, their resources started to slide along with it including their savings. It put them in a position where then they had to let go of that person that was running the store for them. Mom and Pop ended up back behind the counter again. So, it puts them in a vulnerable position for anything that impacts them negatively.

What we experienced a couple of weeks ago was that we had a good snowstorm which in Taos County is always reason to celebrate because that means the ski resorts are going to be busy. The restaurants are going to be busy. The lodging establishments are going to be busy.

Unfortunately we ended up in a situation on Thursday coming into a weekend which would generally be very busy for all of the businesses concerned where restaurants which principally cook with gas had to close. Lodging establishments which principally either heat or have restaurants that cook with gas, hot water was non-existent. Not only did they lose customers over that period of time because people were canceling their reservations. The people that were already there were leaving their establishments.

The repercussions from this could be fairly long term. Because as we know people get an idea in their head and it tends to stick with them. So they are actually feeling lost reservations now in the lodging community even a couple of weeks afterwards just because of the negative publicity that occurred during this event.

Basically 6 days of lost business impacted our community in many ways. Although we do have economic reports that we've put out we have not been able to gather the exact numbers of how this affected our community overall economically. We will continue to gather those. As soon as we have them we will certainly forward them on to you.

[The prepared statement of Mr. Fuhlendorf follows:]

PREPARED STATEMENT OF STEVE FUHLENDORF, CHIEF EXECUTIVE OFFICER, TAOS
COUNTY CHAMBER OF COMMERCE

- Taos has twice the national average of entrepreneurial enterprises.
- Mom & pop once had someone else minding the store. With the economic downturn, they have depleted their resources and are now running the store themselves.
- Landlords are lowering rent to keep their tenants businesses from folding.

The four year average growth rate is 3.1%. The third and fourth quarters of 2005 and second quarter of 2006 all experienced double digit growth rates. 2007 suffered four consecutive quarters of negative growth. When adjusted for inflation by applying the Consumer Price Index (Urban) fourteen of the past sixteen quarters experienced a negative growth rate. A negative percentage change over the same time in the previous year for two consecutive quarters defines a "recession".

- We began to see an upturn in the Taos economy in the third and fourth quarters of 2010, but with resources gone it takes time to recuperate from losses incurred since 2007.
- Six days of lost business with these factors can and will be devastating to some businesses. Lodgers experienced cancellations and early departures. Restaurants were closed so no revenues. Retail businesses had to close due to the cold. Plus these business owners and their employees were told to stay home so they would be there when New Mexico Gas Company came to relight.
- Many business owners had business interruption insurance. What they are finding out now is the gas outage is not necessarily covered by that insurance.
 - One restaurant owner was closed for five days. That is revenue that can not be recuperated.
 - Another restaurant owner was planning an event to assist a charitable organization, but had to cancel because of lost revenue.
 - A bed and breakfast owner is available 24/7/365, but was empty because he had no heat or hot water in his rooms.
 - A retail fabric store had pipes burst in the apartment above his business soaking merchandise and the floors, but could not dry the products or the carpet, because there was no heat.

Mr. FUHLENDORF. But anecdotally I think we can get some idea of what the actual impact was. I'm going to give you a couple of examples of business owners that I talked to and the repercussions from this event on them.

A restaurant owner that I talked to had said he lost in the neighborhood of \$20,000 over the period of those 6 days that his business

had to be closed. He has business interruption insurance. So this is something that I had assumed that would cover an event such as this.

Quite frankly I was counting on that for many of our businesses that they would have that. Many of them do. Unfortunately what he found out was when he submitted his claim to the insurance company they told him that a gas outage was not covered under his business interruption insurance. So he had to go other means to recuperate the losses that he received.

Another restaurant, the owner said that he lost approximately \$25,000 during the period of time that he had to be closed. But the ripple from that—and he was going to—next week have a charitable event for one of our non-profit organizations in Taos. He decided to cancel that because he had experienced such losses during this period. So the ripple extends to the non-profit organizations also in Taos because they rely on the businesses to support them.

One of our bed and breakfast inns said that they lost approximately \$6,000 during that period. Now that may not seem like a huge amount in the big scheme of things but when you look at a bed and breakfast inn that has eight rooms, that's a big chunk of their income. So it's very unfortunate that they had to experience that because it's definitely a hardship on them.

One of the things that I think we are very aware of is that the communications were somewhat lacking during this period. The Town of Taos, the public relations offices there, Kathy Connelly was forwarding information. Then I was taking that information and forwarding to our business community.

What we were told through the entire weekend was stay home. Wait for the gas company to show up. They're going to turn you back on.

What that happened was that businesses felt like they had to be close to stay home so that they could have heat at home. They had to send their employees home. They had to be home to get their gas turned back on.

Finally on Monday, the Mayor of Taos, Mayor Cordova, made what I think is a bold move. He said if you have the resources, turn on your own. Light your own pilot light. Turn on your own gas because we're not sure when New Mexico Gas Company is going to be able to turn you back on. So most people did that. Consequently a lot of people were back on by Monday.

But obviously we do have substantial ripples from this event. As I stated earlier it is a business community that was already severely weakened by the economy. This was a burden that many businesses are not going to be able to overcome. So I thank you for allowing me to make my testimony this morning.

The CHAIRMAN. Thank you very much. Thank all of you for your testimony. Let me just make a comment.

Obviously the human toll and the hardship that was experienced by families and communities was enormous. Then you've done a good job of describing that in your individual communities. I sort of heard 3 main themes from what I heard here.

No prior notification or inadequate notification that this was happening.

Inadequate communication throughout the period of this crisis.

Third, a lack of inadequate emergency response plan.

Obviously there's still a lot of questions many of you alluded to about the claims process and what can be expected in that regard. The extent of the economic impact is still being determined as I understand it. Not only the economic impact on businesses as you were describing, Steve, but also the economic impact on families that experience—these are all very serious issues that we need to address at of course, our next panel is able I think, to address some of these. That's the reason we ask them here today. I do not think I'll try to question each of you again at this point about these problems. But let me call on Senator Udall to ask any questions that he would have of this panel before—

Senator UDALL. I just thought it might be helpful for Mayor Torres. I think you used the term, you said, the crisis is still not over. If you would could you elaborate on that a little bit? I think you did in your testimony but do you have the same kinds of things going on that Steve talked about in terms of your business people. You didn't mention small business—

Mr. TORRES [continuing]. Furnaces that now need to be fixed because of the loss of gas, broken pipes that need to be fixed and people on fixed incomes trying to decide how they're going to come up with the money to do that. We have the same situation with businesses that were impacted. One popular restaurant estimated the three and a half days they were closed they lost receipts anywhere from \$6 to \$13,000 per day. That doesn't include sending their staffs home and the loss of the paychecks there, so absolutely.

The other thing that I think that we're still waiting to hear, I believe that the crisis continues because when the next perfect storm should hit and we know that it will eventually. Are we going to be the convenient communities that are chosen again to save the system? So I think that's a question that remains in my community and in all the meetings I just haven't been able to hear anything that I can take back to say we'll be spared the next time.

We've got so many economic factors that we're trying to deal with, even at the municipal level. All of us are dealing with that loss of revenue and increased cost that we're going to have to figure out how we're going to cover municipalities as well.

Senator UDALL. Thank you very much.

I had the opportunity of going up to northern New Mexico as the gas was starting to get on and meet with some of the mayors in Taos that had come in for the meeting with first responders. I was struck by the pulling together of the community. I think several of you described this.

I mean the way we really got through this was that people stepping forward. People offering that were better off to be able to go out and do things, the kind of thing that you talked about in terms of re-lighting. We had the Governor bring the National Guard in to help with some of that.

It really seemed to me the thing that kind of pulled it all together and got us through this was the volunteer effort with the emphasis on the people, the more vulnerable people. Governor Dasheno, you mentioned disabled people in your pueblo that needed help. Once again I think as I've seen these crises whether it's a forest fire, a flood or whatever it is. It's that wonderful spirit of

New Mexicans kind of pulling together to help out that I think really, really made a difference. I thank all of you being key leaders in your area for what you have done in that respect.

Thank you, Senator Bingaman. I don't have any further questions.

The CHAIRMAN. Thank you all very much for being here and your testimony. We will try to follow up and we'll try to get answers to many of the questions that you raised. That's the purpose of this hearing and purpose of the various investigations going on. Why don't we dismiss this panel, take a very short break and invite the second panel to come forward and we will startup again in 5 or 10 minutes, and hear from the second panel.

[Recessed.]

[Reconvened.]

The CHAIRMAN. Our County Commission Chairperson is Maggie Hart Stebbins. She is here. We appreciate her being here and also the willingness of the county and the city to allow us to use these facilities for this hearing.

County Commissioner Art De La Cruz is also here. We appreciate him being here very much. So thanks to all of them.

I'll go ahead and introduce all 6 of our panel members. I guess, I think there's supposed to be 6. We've got 5 of them that I see. So we'll introduce them all and then hear from them in this order, I guess.

First would be George Schreiber, who's President and CEO of Continental Energy Systems. George, thank you very much for being here.

Miss Shelley Corman, who is Senior Vice President with Transwestern Pipeline in Houston, Texas. Thank you for being here.

Miss Janice Parker, who is Vice President of Customer Service with El Paso Western Pipeline Group out of Colorado Springs, Colorado. Thank you very much for being here.

Mr. John Dumas, who is, I believe, still going to be here, is the Director of Wholesale Market Operations with ERCOT, the Electric Reliability Council of Texas. We appreciate him being here today.

Mr. Gerry Cauley is the President and Chief Executive Officer with NERC, the North American Electric Reliability Corporation in Washington, DC. Thank you for being here.

Mr. Joseph McClelland, who is the Director of the Office of Electric Reliability with FERC, the Federal Energy Regulatory Commission in Washington, DC. Thank you very much for being here.

Why don't we just have you proceed in that order? Starting from my right and going all the way to the left. Each of you take 5 minutes or so and give us your, the main points we need to understand.

The full statements that you have prepared for this hearing will be made part of the record. Then following all of your statements, Senator Udall and I will have some questions of you.

George Schreiber, go right ahead.

**STATEMENT OF GEORGE A. SCHREIBER, JR., PRESIDENT AND
CHIEF EXECUTIVE OFFICER, CONTINENTAL ENERGY SYS-
TEMS, LLC, AND MEMBER OF THE BOARD OF DIRECTORS OF
ITS SUBSIDIARY, NEW MEXICO GAS COMPANY, TROY, MI**

Mr. SCHREIBER. Thank you, Mr. Chairman. Senator Udall, Congressman Heinrich, Congressman Luján, thank you very much for the opportunity to present this statement this morning.

So people are not confused I just want to explain that while I am with Continental Energy Systems, I am a member of the Board of Directors of New Mexico Gas. I'm here with 10 of my colleagues from New Mexico Gas. I'm very much involved with the company on a day to day basis not only from an operations point of view, but also because Albuquerque is my hometown.

As we have heard in earlier panels, the disruption of service to our customers caused hardships, inconvenience and expense. A lot of we also heard was about our communications plan, our emergency response plan and we fully agree that we could have done things better. OK?

We have changes that are currently underway. We are participating and look forward to a full review of all of these various factors by the Public Utility Commission. I believe that we'll be filing testimony in that proceeding on March 17th. We look forward to the involvement in those regulatory proceedings.

These interruptions would not have happened if upstream sources of natural gas had met their commitments. Customers depend on a reliable natural gas delivery network. The fact that New Mexico Gas was required to curtail to its customers was and is unacceptable. As an industry we need to work with regulators and policymakers to ensure that this does not happen again.

It is clear that we have a problem with the reliability of the regional energy infrastructure. This is an issue of national importance. We must address it immediately.

This statement basically summarizes my pre-filed testimony which goes into this situation in much more detail. We plan our business operations and manage our gas deliveries to meet the demand for natural gas by our customers including having enough gas on peak usage days. As I said, this is an interdependent network. It is essential that there be reliable, available, sufficient amounts of electricity to move natural gas from well head production to gathering, to processing, to interstate transmission pipelines and finally to New Mexico Gas Company's 500,000 residential, commercial and industrial customers.

We learned that regional infrastructure cannot get the job done at least under the combination of conditions that the industry faced 3 weeks ago. As the loss of electric service in Texas and the effects of weather on gas production and delivery systems, we were forced to interrupt service to 28,707 of our customers in order to save the entire New Mexico Gas delivery system. Had we lost the entire system, the re-lighting process would be continuing today.

Let's step back for a moment to Monday, January 31, 2011. Our Operations Control Center was monitoring a storm which the National Weather Service called a "winter storm of historic proportions." They were not kidding. The extremely low temperatures

brought to New Mexico by this storm had been experienced on only 2 other occasions over the last 100 years.

We started preparing for this storm early in anticipation of a significant increase in the use of natural gas by our customers. For February 1st, 2nd and 3rd, New Mexico Gas pre-purchased and scheduled for delivery additional quantities of natural gas in excess of forecasted amounts by 36 percent, 55 percent and 62 percent, respectively. In other words we purchased significantly more gas than our forecasting models predicted we would need believing that the usage would spike during the storm.

As the storm approached we were highly confident we could manage things well so that natural gas would reach our customers as they needed to heat their homes and businesses. The problem was that these additional supplies of natural gas were never delivered. Never before in the history of New Mexico Gas or its predecessors have scheduled deliveries of natural gas not been delivered on this scale. At the same time our system demand was nearly doubled the average peak day demand over the last 10 years.

Our customers didn't get the gas they needed because electric service disruptions in Texas prevented sufficient production to meet the demand for natural gas. Gas fields experienced the effects of frigid weather. 28,707 of our customers were without natural gas for up to 6 days, in very cold temperatures, a completely unacceptable situation.

When the gas need of our customers did not arrive we took steps necessary to save our system by curtailing service in several areas of the State. I will add that we are currently analyzing exactly how our system operates and looking for ways where we can isolate segments of our system better than we currently have. That process is going on and we will be making changes in that—in the way we operate our business as well.

But we did do our level best to restore service to our customers. But furnace and appliance re-lights are man power intensive, time consuming undertakings, especially in rural areas of New Mexico. Neither our customers nor New Mexico Gas should ever have to go through that service restoration process again.

This discussion then brings me to the reason that we are all here today. On a policy level there are questions that need to be addressed.

First that comes to mind, should critical areas such as gas producing basins be exempt from rolling blackouts because of their importance to the safety and well being of citizens?

Should critical facilities, including processing plants be required to have back up generation, electric generation?

Do all well head and gathering systems have the proper dehydration equipment in place to keep freezing from occurring at the well head?

What is the best approach to ensure that segments of the industry, critical to the natural gas infrastructure, achieve an enhanced level of reliability?

An improved approach to the critical interdependence of the electric grid and natural gas industry needs to be developed. Quite frankly it is outrageous that the electric supply system and regional natural gas infrastructure problem would cause 28,707 of

my customers to lose natural gas service when record low temperatures hit the region.

Thank you again, Mr. Chairman, Senator Udall, for allowing me to make this statement.

[The prepared statement of Mr. Schreiber follows:]

PREPARED STATEMENT OF GEORGE A. SCHREIBER, JR., PRESIDENT AND CHIEF EXECUTIVE OFFICER, CONTINENTAL ENERGY SYSTEMS, LLC, AND MEMBER OF THE BOARD OF DIRECTORS OF ITS SUBSIDIARY, NEW MEXICO GAS COMPANY

Mr. Chairman, Senator Udall, Members of the Committee, and Congressmen Heinrich and Lujan:

Thank you for the opportunity to address the Committee today about the recent natural gas service disruptions in New Mexico, and more broadly the reliability of our regional energy infrastructure, in light of the events during the week of January 31, 2011, during which twentyeight thousand, seven hundred and seven (28,707) customers of New Mexico Gas Company (NMGC) in communities throughout the state lost gas service. In my testimony, I will first discuss the storm, the gas supply shortages in the interstate pipelines and the gas service curtailment and System Emergencies initiated and declared by on February 1st, 2nd and 3rd 2011.

I will first discuss NMGC's pre-curtailment planning, curtailment decision making, and the performance of our distribution system. In the middle section of my testimony, I will address the recovery effort. By that, I mean the steps taken to restore service to our customers once our distribution system stabilized. I will also share some lessons learned and actions NMGC will take in the coming months to better serve our customers should New Mexico face an event of this magnitude again. Finally, my testimony will address matters beyond our control. We would like to know more about the specific upstream events in Texas that prevented the interstate pipelines from delivering gas on February 2nd and 3rd 2011, that NMGC had ordered and paid for. There are questions that need to be addressed about the reliability of well head production, and natural gas gathering lines and processing plants. Our concern is that the necessary investigation and analysis will not occur absent oversight by this Committee and a concerted fact finding investigative effort by federal regulators. Our goal as a company is that NMGC will be able, later this year, to provide assurances to our customers that steps have been taken to prevent this kind of event in the future. If we achieve that goal, it will be in large part because of the initiative this Committee is demonstrating today. We thank the Committee for its efforts and pledge our cooperation.

I. Background

The majority of NMGC's gas supply comes from New Mexico and is received into our system either directly from the San Juan Basin, near Farmington, or through the Transwestern and El Paso Interstate Pipelines. The balance comes from suppliers and producers in Texas which is also transported through the Transwestern and El Paso pipelines. This includes gas from our contracted geological storage facility in Texas.

NMGC operates two primary segments of its system. The South segment primarily receives gas fed off the El Paso south pipeline, and serves the communities of Silver City, Alamogordo, Tularosa and La Luz that experienced outages. The North segment is primarily fed off the El Paso north and Transwestern pipelines and serves the northern communities and Native American pueblos that were affected by outages, including Bernalillo, Placitas, Taos, Española, Red River and Questa, and surrounding communities.

During the week of January 31, 2011, the delivery of natural gas to NMGC from West Texas was severely limited by a once-in-50-year event that the National Weather Service characterized as "a winter storm of historic proportions." The storm and rolling electrical blackouts in Texas significantly reduced vital gas field operations and gas processing facilities. Pressure on the interstate pipelines which transport gas to New Mexico and three other states, California, Arizona and Texas dropped significantly. Gas outages were reported in New Mexico, Arizona and Texas. NMGC experienced a dramatic loss of gas supply, and significant pressure reductions from the interstate pipeline system. In contrast, our direct suppliers in New Mexico continued processing and delivering approximately 90% of scheduled gas.

The facility specific facts and circumstances that caused these losses in the interstate pipelines are best addressed by the producers, gas processing plant owners and operators, and interstate pipeline companies. Gas delivery off these facilities to

the New Mexico Gas Company system was severely limited. Without these disruptions in supply of gas, NMGC would not have had to curtail or interrupt service to its customers. Thus, while this event has been described as a local gas supply matter, it is more accurate to describe it as a disruption in the interstate gas delivery system which we understand was caused by electricity disruption and/or weather conditions in Texas.

II. The Events at NMGC on February 1-3, 2011

NMGC routinely monitors long- and short-term weather forecasts. In the long-term forecast, NMGC saw an emerging weather system that had the potential to affect demand for gas as early as January 31, 2011. As with all storms, NMGC preparations commenced early. Our system transmission lines were safely packed with extra gas, and NMGC confirmed that our gas storage facility was positioned for withdrawals when needed. Additional gas was purchased for the anticipated surge in demand by our customers. For February 1st, 2nd, and 3rd, NMGC had pre-purchased 36%, 55%, and 62%, respectively, more gas than our forecasted need. In other words, NMGC had bought significantly more gas than our forecasting models had predicted we would need considering this type of storm—correctly anticipating how severe it would be.

These steps were intended to ensure supplies were ready when our customers' use reached its peak.

Given the severity of the anticipated storm, at 9:00 a.m. on Wednesday, February 2, 2011, NMGC requested that large industrial and commercial customers throughout the state voluntarily reduce or curtail their gas usage. In total, NMGC contacted 39 customers asking for voluntary curtailment.

Throughout the work day on Wednesday, NMGC monitored gas supply and pipeline pressures as is our normal practice. Pressures and supply remained within operational limits. NMGC had purchased and was anticipating an incremental delivery of gas at 9 p.m. on Wednesday.

At 9:00 p.m. Wednesday, the pre-ordered gas was not delivered from the interstate pipelines as scheduled. As a result, throughout the night and into Thursday morning, NMGC repeatedly contacted suppliers and pipeline operators in an effort to secure additional gas for customers. At 2:36 a.m. on Thursday morning, because of low pressures on the South segment of the NMGC system, the Company declared a System Emergency on the South segment and began the process of curtailing customers. During the night, we were coordinating with the Otero County Emergency Coordinator, the Otero County Sheriff and Tularosa Police Department as service was being curtailed.

Despite the problems on the South segment, NMGC, monitoring the North segment in the pre-dawn hours, believed it to be stable, with adequate line pack and that NMGC would be able to meet the anticipated morning surge in demand. Additionally, NMGC was scheduled to receive an incremental delivery of gas at 8 a.m. Thursday. Never in the history of gas operations at NMGC, or its predecessors, had the regional gas infrastructure failed to deliver purchased incremental gas on two consecutive occasions, and therefore NMGC reasonably expected this morning delivery.

By 7:30 on Thursday morning, NMGC was experiencing a significantly increased demand for gas—70% greater than peak day demand, and therefore was experiencing a decline in line pack at an extraordinary rate. By 7:30, NMGC declared a System Emergency on the North segment of its operations. This situation triggered preparations for reducing system demand in the event the anticipated 8:00 a.m. incremental delivery of gas did not materialize, including immediately initiating mandatory curtailment of service to large commercial and industrial customers. In total, NMGC curtailed service to 9 large customers during Thursday.

At 8:00 Thursday morning, NMGC learned that the pre-ordered gas scheduled for delivery at 8:00 a.m. was not being delivered. Given this development, as pressure on the Taos Mainline began to drop precipitously, NMGC shut off the Ottowi valve to curtail service to the Taos Mainline. This curtailment was an effort to safely control this portion of the system as it lost pressure and to reduce demand throughout the system and in order to preserve the remainder of the system. Shortly after this, NMGC, working with PNM, curtailed service to the Cobisa power plant in Albuquerque. Further action was taken to reduce customer demand by closing valves to curtail service to Bernalillo and Placitas. Altogether, these actions reduced demand on the North segment and preserved the remainder of the North segment. Had NMGC not closed valves in the North, including Bernalillo and Placitas, NMGC risked losing its entire system.

Regarding these actions, the design of NMGC's distribution system alone dictated that NMGC move quickly to identify critical valves that were easily accessible by

crews that would, once shut down, reduce customer demand and increase pressure throughout the system. By “easily accessible,” we mean valves that could be reached and closed within 20 to 30 minutes.

In addition, we had to close valves to those portions of the system already experiencing the lowest pressures. The system design and valve configuration in communities such as Albuquerque and Santa Fe are too complex to complete a shut down in the time required to provide support for the remainder of the system.

III. Recovery and Post-Response Efforts

Following the difficult decisions in the pre-dawn and early morning hours of Thursday, pressures on both segments of the system—North and South—began to stabilize. The South segment stabilized quickly, and by 10:34 a.m. the North segment had achieved a balance between supply and demand. Throughout Thursday, line pack increased. At the same time, NMGC remained concerned about its ability to handle anticipated customer demand on Friday morning. NMGC, working with cities and the state government, renewed efforts for voluntary curtailment, including closing non-essential services, schools and businesses. As a result of all these efforts, plus moderating temperatures, the line pack was restored throughout Thursday and by Friday morning, with reduced customer demand, the Company could turn its attention and its full resources to restoring the service to its customers that had been curtailed.

In order to restore service, the following procedures were set in motion: First, NMGC has to physically shut off each individual meter in order to be able to purge the lines of air. After the lines are purged, each individual meter must be turned on and the appliances relit. The second step, re-lighting, could not commence until all customers in an area that had their meters shut off and the lines in that area had been purged of air. The act of relighting a home required customers to be home.

Among its efforts to bring all resources to bear in this effort, NMGC, enlisted the service of utility workers from across the country to come to New Mexico to assist, including 69 from its sister company in Michigan. NMGC also utilized the services of Plumbers and Pipefitters Local 412, many private contractors from the affected areas, and National Guardsmen, fire personnel, and state and local police. At the height of the effort, over 1,100 individuals participated in the recovery process.

Despite the application of all of these resources to re-establishing service, our initial estimate as to when service would be up and running was overly optimistic. Our goal was Sunday February 6th, but service was not restored to all of our customers until Tuesday, February 8th. Some customers—less than 50—were “red-tagged” because appliances were unsafe. On February 12th and 14th our crews went back to those customers and undertook the necessary repairs to restore service at no charge.

IV. Lessons Learned: Review of NMGC Operations and System

While NMGC is not responsible for the production, processing or interstate transmission of gas to our system, we have learned from this situation and accept responsibility for the things we could have done better. In addition to participating in the numerous investigations that will result from these events, NMGC is independently undertaking the following actions.

First, NMGC established a \$1 million relief fund to assist customers with their needs arising from the outage. A claims form and a process for evaluating claims have been set up. NMGC continues to seek additional contributions to this fund from others in the industry.

Second, in the coming months, NMGC will conduct a complete review of its processes and procedures and will retain outside consultants as necessary to conduct an independent assessment of our actions.

Third, NMGC will institute completely revamped communications plans and processes, including:

- A. Developing a dial-out early warning system capable of alerting customers of emergency situations.
- B. Developing a customer communications plan outlining steps to be taken, including more aggressive pre-emergency communications and the use of social media, where appropriate.
- C. Additional use of local radio and television.
- D. Enhancing direct communications with state and local elected officials and government agencies, Native American pueblos, and the state's Emergency Operations Center and the State's Department of Homeland Security.

Fourth, NMGC has already retained an independent consultant to conduct a thorough evaluation of its entire emergency operating procedures and policies and make recommendations for improvements.

Fifth, NMGC will review and revise its customer curtailment and service restoration procedures including better ways to sectionalize areas of our system to make sure that system operation is better situated to minimize the impact on the areas that suffered during this event.

Sixth, NMGC will evaluate all physical system improvements including the feasibility of establishing back-up supply measures, including LNG, propane air systems, above and underground storage; methods to loop lines or building new lines so that branches of the system are less susceptible to pressure loss.

V. Industry-Wide Improvements Needed

In the last two weeks, the root causes of the failure of the regional gas supply infrastructure have received little public scrutiny. This is understandable for several reasons. First, as this testimony is prepared, the storm and the gas curtailments occurred only two weeks ago. Second, the facts are difficult to gather. Third, there is no single regulatory body that has jurisdiction over all of the industry segments.

The gas industry is no longer vertically integrated. There are many parties involved in our industry including gas producers, suppliers, gathering systems, processing plants, pipeline owners and operators and natural gas storage providers. The importance of a reliable electricity supply cannot be overstated. Each company in the gas and electric industries plays a critical role in delivering gas to customers. Each can undoubtedly make important contributions to the fact finding effort, and each should be involved. Industry involvement can also help develop system wide improvements that will be needed to accomplish this Committee's goal of improving the reliability of the regional energy infrastructure.

Mr. Chairman, NMGC very much appreciates the chair's initiative in scheduling this hearing today. The New Mexico Public Regulatory Commission and the Federal Energy Regulatory Commission have initiated inquiries into the events of February 1, 2, and 3. NMGC is looking forward to participating in these hearings. We pledge our cooperation. We note that FERC in its February 14, 2011 order commented on the investigations that have commenced in Texas, New Mexico and Arizona. FERC stated that it "would seek to coordinate efforts with those states and their regulatory authorities, and exchange relevant information so that we are mutually able to determine quickly what went wrong and how to prevent a recurrence." Mr. Chairman, New Mexico Gas Company concurs. Cooperation and coordination will be key to accomplishing this Committee's objectives. There are various models for effectuating this cooperation including the multi jurisdictional task force approach, under the auspices of the Department of Energy, that was used to convene the investigation, and author the definitive report on the 2003 blackout in the north-eastern United States and Canada.

With respect to fact finding, there is a consensus that the bad weather, frozen pipes, and rolling blackouts in the electric grid in Texas hampered the ability of producers and processing plants to push gas into the interstate pipelines. The details of and the interrelationship between these events must be developed.

On a policy level, there are issues that should be explored. Should critical areas, such as gas producing basins, be exempt from rolling blackouts because of their importance to the safety and well-being of citizens? Should all critical facilities, including processing plants, be required to have back-up generation? Do all wellheads and gathering systems have the proper dehydration equipment in place to minimize freezing? What is the best approach to ensure that segments of the industry critical to the natural gas infrastructure achieve a greatly enhanced level of reliability?

Clearly, there should be increased real time information sharing among all parties in the natural gas delivery system. An improved approach to the critical interdependence between the electric grid and the natural gas industry needs to be developed. This recent crisis clearly demonstrates that a failure in the electric grid can disrupt natural gas supplies, which can impact thousands of natural gas customers.

To conclude, and bring this matter and testimony back home to New Mexico, NMGC is determined to do what it can to insure that we are in a better position to minimize service interruptions, to communicate more effectively, and in the aftermath of an event to do everything we can to expedite the restoration of service to all of our customers. To achieve this goal and to improve the regional infrastructure, we pledge NMGC's full cooperation.

Thank you again for this opportunity to present New Mexico Gas Company's perspective and insight into the system failures that occurred on February 1, 2, and 3, 2011. This concludes my testimony.

The CHAIRMAN. Thank you very much.
Ms. Corman, go right ahead.

STATEMENT OF SHELLEY A. CORMAN, SENIOR VICE PRESIDENT, COMMERCIAL & REGULATORY TRANSWESTERN PIPELINE COMPANY, LLC, HOUSTON, TX

Ms. CORMAN. Chairman Bingaman, Senator Udall, Congressman Luján and Congressman Heinrich, thank you very much for the opportunity to testify today.

My name is Shelley A. Corman. I am the Senior Vice President of Commercial and Regulatory Affairs for Transwestern Pipeline Company. I am here to offer my knowledge of the facts concerning Transwestern's transportation service and our pipeline system operating conditions during the recent period of winter weather.

Transwestern recognizes the importance of gas service reliability. I want to assure this Committee that our personnel did everything in our control to facilitate deliveries to New Mexico customers. Because natural gas service has historically been so reliable, Transwestern agrees that we must ensure that even in the exceptional conditions that we've experienced that the natural gas deliveries—

During the recent winter weather Transwestern allowed—to make up—Transwestern is an interstate natural gas company that transports natural gas from San Juan Permian Basin to market in the Midwest, Texas, Arizona, New Mexico, Nevada and California. We have 28 delivery points in the State of New Mexico including 10 delivery points to New Mexico Gas Company.

Transwestern is a transportation only pipeline. We don't buy or sell gas for resale. Shippers purchase their own supplies and contract with Transwestern to receive, transport and re-deliver the gas at specified delivery points.

We own and operate compression with the gas from receipt point to delivery point and to maintain an operating pressure.

Approximately 75 percent of Transwestern compression runs on gas while 25 percent of the compression is driven by electric motors with power provided by local utilities. Recent extreme weather conditions reduced the supplies flowing into Transwestern. At the very same time shippers requested dramatically increased volumes of gas.

On February 2, substantially more gas was drawn out of the pipeline at delivery points than was being put into the Transwestern system at receipt points. For several hours during February 2nd nearly 400,000 MMBTU more gas volume was being delivered out of Transwestern than was being received into the system. As a result the pressures in the pipeline were lowered and the "line pack," that is the volume of gas in the pipeline was reduced.

Despite these operating changes Transwestern kept its pressure above our contractual minimum operating pressures. Transwestern had more than enough of pipeline capacity to meet our shipper delivery requests. There was no compression or pipeline outage on the Transwestern system that impeded our ability to receive or deliver gas to shippers in New Mexico. We operated our compression to maximize the pressures in New Mexico given the quantities of gas in the pipeline. Our gas control personnel worked around the clock through the critical periods with their counterparts at New Mexico Gas Company to maximize deliveries.

Beginning on February 2nd and through the extreme weather we issued critical operating notices where supplies were not being received. We also issued operating notices to our shippers informing them of low “line pack” conditions. Transwestern gas control personnel maintained continuous communication with shippers and operators to keep all parties up to date.

We do not have firsthand knowledge of why particular supplies were not received as planned. Nor do we fully understand whether there were any downstream operating conditions that prevented shippers from taking gas at lower line pressures. The extreme cold conditions created unique difficulties for many segments of the natural gas industry and the industries that support it.

We are proud of the manner in which we managed our system.

We believe Transwestern used all the tools in our control to maximize the gas available at New Mexico delivery points.

We believe that participants in the natural gas supply chain should have the opportunity to meet and review data and gain a better understanding of each other’s systems during this extreme weather. We understand that the Federal Energy Regulatory Commission has initiated an inquiry on this issue. That could be the forum for interested parties to exchange information, have dialog and form recommendations for future weather events.

Thank you for this opportunity to testify. I look forward to your questions.

[The prepared statement of Ms. Corman follows:]

PREPARED STATEMENT OF SHELLEY A. CORMAN, SENIOR VICE PRESIDENT, COMMERCIAL & REGULATORY TRANSWESTERN PIPELINE COMPANY, LLC, HOUSTON, TX

Chairman Bingaman, Ranking Member Murkowski and members of the full Committee, thank you for the opportunity to testify today.

Introduction

My name is Shelley A. Corman and I am the Sr. Vice President, Commercial & Regulatory for Transwestern Pipeline Company, LLC (“Transwestern”). I am here to offer my knowledge of the facts concerning Transwestern’s transportation service and pipeline system conditions during the period of recent winter weather. Transwestern recognizes the importance of gas service reliability, and I assure this Committee that Transwestern personnel did everything in their control, and our facilities were ready, willing and able, to receive and move all supplies delivered to Transwestern and redeliver those supplies to our customers in New Mexico. Transwestern went so far as to allow significant depletion of Transwestern’s “line pack,” gas within its system, to facilitate deliveries to New Mexico customers.

Background of Transwestern’s transportation system

Transwestern is an interstate natural gas company operating pursuant to a certificate of public convenience and necessity issued by the Federal Energy Regulatory Commission. Transwestern transports natural gas from the San Juan, Anadarko, and Permian Basins to markets in the Midwest, Texas, Arizona, New Mexico, Nevada, and California via approximately 2,700 miles of pipeline. Transwestern’s mainline capacity flowing west from the Permian Basin to the California border is approximately 1.2 Bcf/day. Additionally, our San Juan Lateral allows San Juan Basin supplies to flow South into the mainline. Transwestern has 28 delivery points in the state of New Mexico, including 10 delivery points to New Mexico Gas Company. Attached is a map* of the Transwestern system. Also attached is another map* showing Transwestern’s New Mexico delivery points.

Transwestern is a transportation-only pipeline. Shippers purchase their own gas supplies and contract with Transwestern to receive, transport, and redeliver the gas at specified delivery points. In theory, shippers arrange to put an amount into the pipeline equal to the amount that they want to have delivered. In reality, more or

* All maps have been retained in committee files.

less gas may be actually received on a given day and the shipper may take more or less gas at the delivery point than scheduled.

Natural gas moves through pipelines and from one system to another based on pressures maintained in the lines. Transwestern owns and operates approximately 330,000 horsepower of compression at 18 mainline compressor station locations along the mainline and on laterals. Compression is utilized to move the gas from receipt points to delivery points and to maintain operating pressures. Approximately 75% of Transwestern's compression runs on gas, while 25% of the compression is driven by electric motors with the power provided by local utilities. Gas supply will only flow into a pipeline if the interconnecting facility pressure exceeds the receiving pipeline pressure. Similarly, gas will flow onto downstream facilities at a delivery point so long as the pipeline's pressure remains higher than the downstream operating pressure.

Natural gas receipts and deliveries on gas day Feb 2-4, 2011

Extreme weather reduced supplies delivered into Transwestern. At the very same time, shippers requested dramatically increased volumes of gas. On the gas day of February 2nd, substantially more gas was drawn out of the pipeline at delivery points than was being delivered to Transwestern at receipt points. As a result, the pressures on the pipeline were lowered and "line pack" (the volume of gas in the pipeline) was reduced as compared to operating conditions on the prior day. I also attach a chart showing hourly receipts, deliveries and pressures.

Despite these operating changes, Transwestern's line did not, at any delivery point, fall below contractual minimum operating pressures, which are intended to indicate the line pressure required to allow shippers to receive required quantities. However, operating conditions on the downstream facilities may have limited the ability to take the gas away from Transwestern at these contract pressures.

Transwestern had pipeline capacity to meet shipper delivery requests. There were no compression or pipeline outages on the Transwestern system that impeded Transwestern's ability to receive or deliver gas to shippers in New Mexico. Transwestern's compressor stations remained operational with sufficient horsepower to transport gas towards the areas of increased demand and maintain required pressures. Transwestern operated its compression to maximize the pressures in New Mexico given the quantities of gas in its pipeline. Transwestern's gas control personnel worked throughout the critical periods with their counterparts at New Mexico Gas Company to maximize deliveries to New Mexico Gas Company.

Transwestern declared and issued critical notices of underperforming receipt points, where nominated supplies were not delivered to Transwestern, and delivered such notices to receipt point operators and affected shippers. We also issued Alert Day critical notices to all shippers informing shippers of lower line pack, where gas volumes in the pipeline were depleted because volumes delivered significantly exceeded volumes received by Transwestern. In addition, Transwestern gas control personnel maintained continuous communication with shippers and operators to keep such parties up to date on line pack conditions.

Transwestern does not have first-hand knowledge of why particular supplies were not delivered to its receipt points when scheduled, nor do we know whether there were any downstream operating conditions or limitations that prevented shippers from taking gas at the delivery points at the prevailing line pressures. The extreme cold conditions created unique difficulties for many segments of the natural gas industry and the industries that support it.

Transwestern's View of the Path Forward

Transwestern believes that the most productive response to the weather events is to allow time and an environment for pipelines and their shippers and interconnecting parties to review operating data and develop protocols to better address future extreme weather events based on this experience.

Thank you for this opportunity to testify. I look forward to answering any questions at this time.

The CHAIRMAN. Thank you very much.
Ms. Parker, please go right ahead.

STATEMENT OF JANICE PARKER, VICE PRESIDENT, CUSTOMER SERVICE, EL PASO WESTERN PIPELINE GROUP, COLORADO SPRING, CO

Ms. PARKER. Thank you. Good morning, Chairman Bingaman, Senator Udall, Congressmen Heinrich and Luján. Thank you for the opportunity to be here. We really appreciate that.

As you said earlier I'm Vice President of Customer Service and that includes the gas control function for delivery of natural gas on our pipeline system of El Paso Natural Gas. We appreciate the opportunity to testify and share any information we have that could help you as part of your inquiry and also to talk about the reliability that we did see in some of our infrastructure during this period of time.

As Ms. Corman said, just like Transwestern, El Paso Natural Gas is an interstate pipeline company. We're regulated by the Federal Energy Regulatory Commission. Ever since 1993 we have been a transportation only pipeline.

We receive natural gas from the suppliers where our customers purchase their supplies. We transport that natural gas. Then we deliver it where our customers have instructed us to make physical deliveries to them. We neither sell gas to our customers as Ms. Corman said.

Our customers purchase natural gas from third parties. Actually where it's put into our system, our pipeline system is downstream of both the production, the gathering, the treating and the processing of natural gas, so all those activities happen before it enters our pipeline. So that it is then pipeline quality for delivery to customers like New Mexico Gas. It can be delivered to homes. The gas that may also come from other pipelines or storage facilities also connect into our pipeline system.

I hope you have in your packet, I did provide a map earlier that gives a little schematic of our pipeline and shows you where the Permian Basin and Anadarko Basin is. Do you need any extra copies?

The CHAIRMAN. I think I have that.

Ms. PARKER. OK. Thank you, sir. I thought that might be helpful as we talk about the different supply basins.

We primarily receive natural gas from 2 supply basins. One is called the Permian Basin. It's in West Texas and Southern New Mexico and the San Juan Basin which is in Northern New Mexico and the very edge of Colorado. Our pipeline then transports and delivers the gas to the customers in various States including West Texas, New Mexico, Arizona, Nevada, California and down to the border with the country of Mexico.

In New Mexico one of our customers is New Mexico Gas Company as well as other municipalities, electric utilities and industrials. We have a north pipeline system that comes from the San Juan and serves New Mexico Gas near the Albuquerque area. Then our south pipeline system picks up gas from the Permian and delivers it to New Mexico Gas in the Alamogordo areas.

We own about 2,800 miles of pipe, 20 compressor stations, all in New Mexico. Then we have about 110 employees located throughout our system in the State of New Mexico to provide quick maintenance of our facilities.

Today I'm going to review the operations as we saw them from January 31st to February 4th, just to help you provide some information. I think one of the things you'll see as many panelists have touched on is that everyone seems to have their piece of information and not the whole picture. So I think these inquiries that are coming up will help us maybe provide more comprehensive service.

On the night of January 31st, temperatures were predicted to be very cold. We packed up our pipeline. As Ms. Corman said, line pack is basically the gas you already have in your pipeline system because our responsibilities are to provide real time delivery. So as our customers are putting natural gas supplies into our pipeline in the San Juan and Permian areas our responsibility is to let them go ahead and take it out real time or simultaneously even though it takes a day or more for that gas supply to move across our pipeline system. So we do it with line pack.

We had a heavy day of demand on February 1st, but everything went fine. We packed our system back up the night of February 1st for even colder temperatures on February 2nd. However early that morning of February 2nd, about 6AM, we noticed that we were not getting the supplies from the Permian Basin that we expected and that our customers had ordered from those suppliers.

We immediately started making phone calls to those suppliers to find out what was going on. Was this a temporary shortfall or was it longer shortfall? We, at that point in time, is when we learned there were some rolling blackouts occurring and some freeze offs and mechanical issues in the supply basin. Because of the cold weather, unfortunately, the customers were taking out a lot more natural gas than was coming into our pipeline system, again that second day. As a consequence of that what we saw is starting with the El Paso, Texas area and then the Alamogordo, New Mexico area and later the Tucson, Arizona area, our line pack and system pressures were being depleted at a rate much quicker than it was being replaced by the supplies coming into the system.

On that same morning of February 2nd within a couple of hours of or within an hour of finding out that information we started putting out notices on our public website about conditions on our system, the severity. As things unfolded we communicated with customers that way and of course as they called us or we called them. Laid out the actions that we needed customers to take to make sure that the system was able to perform the deliveries of the gas that we had and the potential consequences if that did not occur.

We also proactively listed out our website on the supply locations that were not providing the gas that they should have. That was twofold.

One so customers would be aware where we were seeing issues of gas not coming into our system.

Second, so that they could find other locations at which to buy natural gas to be delivered to our system.

We did see customers, you know, try to find additional natural gas, but it was not, with the freeze offs in the Permian, it was not as available to them as what they were used to in the past. We did see market demand continue to increase. So supply continued to go down. Market demand continued to go up.

One thing I can say that we were able to do in addition to providing the line pack in our system to hold up deliveries at least on February 2nd is that we were able to offset some of the lack of supply through our Washington Ranch storage facility. It's located near Carlsbad, New Mexico. It operated very well during this cold period. We were able to withdraw at the maximum rate during the whole period of time. Unfortunately it was not enough to offset the total supply deficiency that we were seeing in the production areas.

By the afternoon of February 2nd, as you can see, things deteriorated pretty quickly on our south system with the Permian supply not coming in at the rate customers needed. Basically we saw pressures on our south system, which I mention again, serves the Alamogordo area of New Mexico, start to fall. So right after lunch we were starting to see pressure problems in El Paso.

Then that progressed across the system. By the morning of February the 3rd which was a Thursday, we were below our typical operating pressures at all locations on our south system. There were supply freeze offs in the San Juan basin that we experienced from February 1 to February 2. But after that it stabilized and our pressures on our north system that serve the Albuquerque area did stabilize slightly lower than what customers were used to, but above the contract pressure was.

Unfortunately the pressures on our south system, our customers depend on a certain pressure to then operate their facilities or distribute natural gas to the far ends of their system. So that lower pressure did impact their ability to fully distribute the gas that they received. We finally started seeing recovery during the day, late in the afternoon of February 3rd, that Thursday. Customers were able to start finding some additional gas supplies to help and demand was starting to lessen just a little bit in some areas of the system.

We were back to normal operating pressures to New Mexico Gas the afternoon of February 3rd. They could then start their re-light strategy and process. By midday of February 4th, which was Friday of that week, pressures were back to normal everywhere on our pipeline system.

The main things I'd like to point out on your question of reliable infrastructure that did work well on our system is we did re-deliver all of the natural gas supplies that our customer's suppliers put into our pipeline system, plus almost another 20 percent that we were able to deliver through our line pack and our storage facility. However it was still not quite enough to keep the pressures up on the pipeline without sufficient gas coming in to replace those deliveries.

We did lose some power from some of our local utilities at some of our compressor stations. But we immediately put staff out at each critical compressor station 24 hours a day during this period. We had 2 shifts going at all times to make sure we could overcome any cold weather issues. We had backup generators at some of the critical facilities and we were able to maintain service through those compressor stations to move what gas we did have available on the system.

We were in constant communication with our customers. I will tell you that New Mexico Gas, in particular, was very proactive in

their outreach to us. As we were all seeing the pressure and supply issues on the system they gave us advice on where to best deliver natural gas to their north system so that they could effectively, you know, maximize whatever gas supply was coming to them. We appreciated that opportunity to work closely with them.

To conclude basically what we think the State of New Mexico experienced at that first week of February was a highly unusual, but widespread winter weather event. It involved both temporary natural gas supply shortages from the cold weather and extremely high demand also due to the cold weather. That imbalance basically meant that we received not enough gas into our pipeline to satisfy the demand going out of the pipeline.

I will commit to you that although the natural gas supply function is not our role or something we can control. We're very committed in working closely with our customers to evaluate the system performances and to improve the reliability to the more distant part of their systems in any way that we can assist.

Appreciate the opportunity to testify. I look forward to answering any questions you may have at the moment.

[The prepared statement of Ms. Parker follows:]

PREPARED STATEMENT OF JANICE PARKER, VICE PRESIDENT, CUSTOMER SERVICE, EL PASO WESTERN PIPELINE GROUP, COLORADO SPRING, CO

Good Morning, Chairman Bingaman. My name is Janice Parker, and I am the Vice President of Customer Service for El Paso Natural Gas Company (EPNG). Thank you for the opportunity to testify today before the Senate Energy and Natural Resources Committee regarding the recent natural gas service disruptions in New Mexico and the reliability of regional energy infrastructure as it relates to El Paso Natural Gas Company's pipeline system.

EPNG is an interstate natural gas pipeline company regulated by the Federal Energy Regulatory Commission. As an interstate natural gas pipeline company, our role, since 1993, is to receive, transport and deliver to our customers the natural gas supplies that they purchase from third parties. We do not sell natural gas to our customers. Instead, our customers purchase natural gas from third parties who then cause the natural gas supplies to be delivered into our pipeline system at a variety of locations. All of these locations where we receive gas from our customers' suppliers are after the gas has been produced, gathered, treated, and processed by other companies. The gas may also come from other pipelines or storage facilities.

Our pipeline system primarily receives gas that our customers purchase from the Permian Basin in West Texas and Southern New Mexico, and the San Juan Basin in Northern New Mexico and Colorado. Our pipeline then transports and delivers the gas to our customers located in West Texas, New Mexico, Arizona, Nevada, California and at the U.S. border with Mexico. In New Mexico, one of our customers is New Mexico Gas Company, along with other municipalities, electric utilities and industrials. EPNG has a north pipeline system with delivery locations to New Mexico Gas in the Albuquerque area and a south pipeline system with delivery locations to New Mexico Gas in the Alamogordo area. In New Mexico, EPNG owns and operates approximately 2,800 miles of pipelines and 20 compressor stations, and we have over 110 employees who maintain our facilities in New Mexico.

Today, I am here to testify about our pipeline operations from January 31-February 4, 2011:

- On January 31, temperatures were cold across the EPNG system and the demand for natural gas was growing. Colder temperatures were predicted for the next couple of days and on the night of January 31, we made sure our pipeline was packed with natural gas for a heavy morning demand. EPNG keeps gas in the pipeline ("linepack") to allow us to deliver gas to our customers on a real-time basis while the customers' suppliers put their natural gas into the system to replace the linepack.
- Early on the morning of February 2, we saw that the natural gas our customers had arranged for delivery into our pipeline from the Permian Basin was not materializing. Later that morning we found out that this lack of supply was due

to problems at third party processing plants and well freeze-offs in the production area. Because of the cold weather, however, customers continued to take deliveries of significantly more volumes of natural gas from EPNG's system than was being delivered into our pipeline by their suppliers. As a consequence, our linepack on the south system serving cities such as El Paso, Texas, Alamogordo, New Mexico, and Tucson, Arizona, was being depleted at a rapid rate and was not being replaced.

- On February 2, EPNG issued operational notices to our customers at 7:24 a.m. Mountain Time (MT), 9:31 a.m. MT, 10:07 a.m. MT, 10:20 a.m. MT, and then at 11:51 a.m. MT as conditions worsened. The Notices laid out the severity of the situation, provided action items that customers should take, and potential consequences if customers continued to take more gas off our system than was delivered on their behalf. We also posted a list of all third-party supply locations that were delivering insufficient gas into our system, so that our customers could try to find other locations with natural gas available for them to purchase. Market demand for natural gas continued to increase.
- To offset the lack of supply, EPNG was operating its Washington Ranch storage facility near Carlsbad, New Mexico, on its south system to withdraw as much gas as we could from the storage field. This facility performed well during the outage and was on maximum withdrawal. The gas withdrawn from our storage field helped to replace some, but not all, of the produced gas that was not being delivered to our pipeline. We also used the available linepack to support deliveries on February 2.
- By the afternoon of February 2, the lack of sufficient supply to meet the high level of market demand for natural gas on the EPNG south system caused the pressure in our south system to start falling. Customers continued to try to purchase gas, but the processing plant outages and well freeze-offs in the Permian Basin continued to limit the availability of supply to meet the market demand on the south system. There were also some supply freeze-offs in the San Juan Basin from February 1 to February 2 but the pipeline pressures on our north system serving the Albuquerque area did not experience any significant change.
- By the morning of February 3, pressures on our south system were lower than normal in most locations. There were some locations where our customers needed a specific pressure to allow them to deliver the natural gas to the far ends of their systems.
- EPNG did not start seeing recovery until late in the day of February 3 when customers were able to locate some additional supply at pipeline interconnects and demand started to lessen. Normal operating pressures to New Mexico Gas in the Alamogordo area returned the afternoon of February 3 which allowed them to start their relight strategy. By mid-day February 4, pressures were back to normal everywhere on the EPNG system.

Specific to the question of reliable infrastructure, I would like to point out the following highlights:

- EPNG redelivered all of the natural gas supplies that its customers purchased that were received into our pipeline system during this event. In fact, through the use of our linepack and our Washington Ranch storage facility, we were able to deliver significantly more gas than we took into our system from third-party suppliers. Available pipeline capacity on EPNG's system was not an issue.
- While we lost power supplied by our local utility at some compressor stations for a short time, we were able to restore operations at the critical units through back-up generators and the expertise of our maintenance and reliability team. We did experience issues caused by the cold weather but we staffed the critical compressor stations 24 hours per day during this event to ensure that the units continued to run as needed.
- We were in constant communication with our customers. New Mexico Gas, in particular, was very proactive in its outreach to us to ensure that the locations where we delivered their gas were the best locations for them operationally.

To conclude, what New Mexico experienced in the first week of February 2011, was a highly unusual, weather-driven event involving both natural gas supply shortages and extremely high natural gas demand. That significant supply-demand imbalance resulted in too little natural gas being delivered into our system and too much gas being taken out. While the natural gas supply function is not within our control, we are very committed to working closely with our customers to evaluate system performance and to improve reliability to the more distant parts of their systems.

Thank you for opportunity to testify and I look forward to answering any questions.

The CHAIRMAN. Thank you very much.

Mr. John Dumas, who is Director of Wholesale Market Operations with ERCOT, the Electric Reliability Council of Texas. Thank you for being here.

STATEMENT OF JOHN DUMAS, DIRECTOR OF WHOLESALE MARKET OPERATIONS, ELECTRIC RELIABILITY COUNCIL OF TEXAS, TAYLOR, TX

Mr. DUMAS. Thank you for allowing me to testify, Senator Bingham and Senator Udall, Congressmen. I have prepared a short presentation I'd like to go over with you that covers the emergency event that occurred in ERCOT. I have extra copies if anyone needs a copy.

The CHAIRMAN. Alright, does everyone have a copy of this? OK, go right ahead.

Mr. DUMAS. ERCOT is an independent or a single interconnect transmission grid that covers about 85 percent of the load in the State of Texas. There are areas in East Texas that are not part of ERCOT. There's areas in the panhandle and El Paso that is not part of ERCOT. We are connected through DC ties in the East region, top right hand corner of the State in the north and we do have some DC ties with Mexico as well.

A couple of points to note on this graph. Our winter peak was 57,282 megawatts. That was experienced on February 10th, approximately 1 week after the rolling blackouts that we experienced on February the 2nd. We set a summer peak in August 23rd of last year of 65,776 megawatts.

As it was mentioned earlier this was a very extreme cold weather event. These were some of the headlines that were in the newspapers leading up to the event. Major winter storm expected. Very cold temperatures were expected.

We go through a process whenever we have winter weather approaching. We take a look at the transmission outages, the planned outages that we have in place. To the extent that we can cancel those transmission outages and put the grid as many lines in service as possible to maintain the expected high loads during that period. We do that.

We had ten 345 KV lines that were put back in service. 2,738 KV lines that were put back in service. 345 is the highest KV level that we have in ERCOT. We also put back in service some transformers. So we were preparing January 28th through the 31st for higher loads due to this cold weather.

Then on January 31st leading into February the 2nd, rolling blackout event, we ordered online some of our longer lead time generation. We have a unit there that has a longer lead time so we ordered it online. We ask it to be online and available on February 1st.

Then we had a unit that can burn oil. We asked it to start burning oil. This is a unit that is in the Dallas region.

This was not, for ERCOT, this was not a gas supply issue to the power plant. So I'm going to talk about the number of power plants

that tripped off due to the severe cold weather in a minute. But this was not due to shortage of gas supply in the ERCOT system.

There were some isolated areas. Lake Hubbard is one area that does have isolated issues with getting gas. But we did have that plant on 100 percent oil.

We issued operating condition notices that as the cold weather was approaching to notify the transmission companies and the generating companies that weather was expected to be very, very cold. That the metropolitan areas would be affected as well and starting around February 1st at 9AM. As we progressed through that period on February 1st, we did have a day ahead market in which people come and schedule and plan generation to be online. They also have the opportunity as loads to buy supplies bilaterally so that they are not dependent upon the spot market prices. They're able to hedge themselves. We did have a lot of our loads that were able to do that.

But we also have reliability tools. We have a reliability unit commitment program that we are able to start any available generation through essentially it's command and control. We're able to start those units up and are able to move on. We started 13 generators in preparation for the cold weather.

As you can see on the next slide a couple lines to note. The expected or the planned committed generation that we had available going into—and this is a view from midnight February the 1st going into the cold weather event on February the 2nd. You can see that we had approximately 63,000 megawatts of generation that was planned to be online and generating to serve approximately forecasted load of 57,000 megawatts of load. So we had enough generation planned to cover what we expected the peak load to be on that day.

As we move through midnight the next graph, the red line shows the planned megawatts that are adjusted due to unit failures or unit trips. So you can see as we progress from midnight through the morning hours that there were a number of units that came off line. Throughout the day there was basically 82 units that either tripped off line or failed to start. So our planned generation which is the blue line was adjusted due to those outages by the red line. There were approximately 8,000 megawatts of generation that was unexpectedly off line simultaneously.

The next graph is a plot of our frequency in ERCOT. Because we are a single interconnect. This frequency represents the frequency that was observed across all of ERCOT.

You can see that at 5:20 in the morning we had responsive reserves that we were able to utilize and fully deploy. Those load resources that are providing that responsive reserve were asked to come off line at 5:20. Then at 5:44, approximately 5:44 in the morning, we began firm load shedding.

Then we started the rolling blackouts at 5:43, 5:44 in the morning. That was the first 1,000 megawatts. Then at approximately between 6 and 6:10 we—or 6:04 we issued another 1,000 megawatts. Then at 6:23AM, February the 2nd, we issued another 2,000 megawatts of firm load shedding. This is a total of 4,000 megawatts of firm load shedding.

The way those instructions go out from ERCOT we make a hot-line call to all of our wires companies, all of our transmission companies. We give them a number that we need them to shed 1,000 megawatts. They have a percentage based upon their service area. They get a percentage of that number. They have procedures that they go through and start opening the breakers that are pre-designated to start the rolling blackouts.

Now this timeline doesn't show it but beginning at 11:39 in the morning we were able to start restoring that firm load. We restored it in 500 megawatt blocks. By 1:07 PM that afternoon we had completely restored, we'd issued the order to completely restore the load that we had shed that began the rolling blackouts. So at that point, at 1:07 PM on February the 2nd, we had completed the rolling blackouts and had restored the firm load. So it was approximately 7 1/2 hours.

The next slide gives you an indication of where the generation that we lost was located in the State. As you can see it was a widespread event. It wasn't isolated to just North Texas or down in the Houston area or the West Texas area.

The generation that we lost, we lost several large coal plants. We lost gas. Every fuel type with the exception of nuclear was affected. Our nuclear generation was not affected on this day.

There was a lot of interagency cooperation that we experienced during this time of the event in the cold weather. The Public Utilities Commission which governs us and the power industry worked very closely with the railroad commission and staff. They were co-operating looking for any issues with the natural gas. They were, like I said earlier, there were a couple of areas where they worked to try to get some more gas for units in those areas.

Also our Public Utilities Commission and the Texas Commission on Environmental Quality worked together to develop and encourage any additional generation that possibly was limited due to emissions. The TCEQ was able to allow those generators to produce more power if necessary due to enforcement. They basically relaxed some of the enforcement during that period to get more power from those generators.

We're continuing to review the actions leading up to the event and the handling of the event itself. We've spoken with the FERC staff. They're opening up an inquiry.

We're working very closely with the independent market monitor who is reviewing the information available in the market and looking at how generators were operating. Also the Texas Regional Entity which is our NERC Regional Entity is also. We've also provided information to that entity as well. We're actively participating with the generators looking at weatherization and those particular issues.

We're also reviewing our communication policies. This is primarily in an effort to get the word out to the public as soon as possible of what's going on, how much load is being curtailed and allow the first responders from the fire department/police department and agencies like that to respond as quickly as possible. We're setting up internal phone banks to be able to answer questions from these agencies on exactly what the situation is. We will be looking at working with our transmission providers. Looking at

if there's any opportunities to use some of the advanced meters that we've deployed in Texas and how that possibly could be done during this event as well.

There are, I guess, a number of questions that have come up about which customers are on those load shedding circuits. The wires companies designed those load shedding plans to avoid what are considered critical customers. There are some guidelines that are at the PEC that identify, you know, nursing homes, hospitals, things of that nature that would be considered critical care customers.

Gas compressing stations are not on that critical list at the moment. I think that is something that will be reviewed by our agency, State agencies, as we go through evaluating lessons learned and what could possibly be improved. I don't know the history of that plan when it was first developed. I think at the time possibly a lot of your gas compressions were not electric they were utilized more from a gas perspective, but that's an area I'm not familiar with. I'm more familiar with the power system and the power grid.

Looking forward to your questions. Thank you for the opportunity—

[The prepared statement of Mr. Dumas follows:]

PREPARED STATEMENT OF JOHN DUMAS, DIRECTOR OF WHOLESALE MARKET OPERATIONS, ELECTRIC RELIABILITY COUNCIL OF TEXAS, TAYLOR, TX

My name is John Dumas. I am Director of Wholesale Market Operations at the Electric Reliability Council of Texas, Inc. (ERCOT). On behalf of ERCOT, I have been asked to describe the grid emergency events affecting the ERCOT system on February 2, 2011. ERCOT appreciates the opportunity to address the Committee as it reviews issues regarding system reliability.

On February 2, 2011, ERCOT experienced outages across the state of approximately 82 generating units representing more than 8,000 MW of generation. This included generating units that were online that tripped offline and units that unsuccessfully attempted to come online.

In many cases, the extremely cold ambient temperatures combined with high winds causing problems with plant control systems such as plant transmitters, transducers, or valves. Many of the outaged generating units returned to service in time for the next morning's peak. In addition, ERCOT deployed other emergency tools at its disposal as grid operator, including responsive reserves and emergency interruptible load service. Nevertheless, ERCOT was required to order rolling outages throughout its region to address the situation.

During the morning and afternoon of February 2, ERCOT issued appeals for energy conservation. ERCOT also provided instructions to restore firm load as generating capacity became available and the loads moderated. By the early afternoon, ERCOT had recalled all curtailed firm load. To ensure it could maintain system stability, ERCOT remained on alert due to freezing temperatures that continued throughout Texas into February 3-4, 2011.

Due to the cold weather, ERCOT set a new winter peak record of 56,493 MW at 7:15 P.M. on February 2, 2011. ERCOT again set a new winter peak the next week: the peak on February 10, 2011 hit 57,282 MW. Notably, ERCOT set a new peak record of 65,776 MW in the summer of 2010.

On February 3, 2011, ERCOT experienced significant instability in the electrical system in the South Texas region. Because several generating units at a combined cycle facility tripped off line in the South Texas region, low voltage conditions resulted in rolling outages in communities in South Texas. South Texas transmission operators managed the situation with controlled rotating outages until they were able to retain balanced load and generation by the early morning hours of February 4, 2011.

The ERCOT region experienced another freezing weather event during the week of February 7, 2011, but operations on the ERCOT system were normal.

ERCOT has expressed its appreciation for the sacrifices of Texas residents who were without power during the rotating outages, and we also appreciate the con-

servation efforts by consumers during this emergency situation as well as load resources in our demand response program. We also want to thank the media for their assistance in getting information out to the public about the need to conserve.

I also want to note the support and assistance ERCOT received from the transmission providers and generation owners in our region, the Public Utility Commission of Texas, the Railroad Commission and the Texas Commission on Environmental Quality.

ERCOT is very proud of the great work by the ERCOT operators in handling what could have been a disastrous situation for the entire state if they had not taken the quick action necessary to preserve the security of the grid.

The CHAIRMAN. Thank you very much for being here. Thank you for your testimony.

Why don't we go on to Mr. Cauley, who is President of NERC out of Washington, DC, President and Chief Executive Officer? Thank you for being here.

STATEMENT OF GERRY CAULEY, PRESIDENT AND CHIEF EXECUTIVE OFFICER, NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Mr. CAULEY. Morning, Chairman Bingaman, Senator Udall, Congressman Luján and Congressman Heinrich.

My name is Gerry Cauley and I'm President and CEO of the North American Electric Reliability Corporation. I'm a graduate of the U.S. Military Academy at West Point and a former officer in the U.S. Army Corps of Engineers. I have more than 30 years experience in the areas of nuclear and electric power safety and reliability including as a lead investigator for the 2003 Northeast blackout.

NERC's mission is to ensure the reliability of the bulk electric system of North America and to promote reliability excellence. The bulk electric system includes generation and transmission facilities operated at greater than 100,000 volts in contrast to the local distribution of electricity to homes and businesses.

In 2006 NERC was designated as the electric reliability organization by the Federal Energy Regulatory Commission in accordance with the Energy Policy Act of 2005. NERC's reliability standards then became mandatory in mid 2007.

NERC oversees more than 1,900 organizations that produce or delivery bulk power including investor owned utilities, Federal, State and municipal utilities, member owned cooperatives, independent generators, power marketers and regional operators. NERC membership represents diverse interests of all reliability stakeholders including large and small electricity customers, State regulators and Canada with whom we share the North American bulk power grid.

In early February extreme cold weather conditions across multiple States in the Southwest led simultaneously to high customer demand for electricity and a significant unexpected loss of generation especially in the Texas area. As a result operators in Texas issued energy emergency alerts and public appeals for the reduction of electricity use and ultimately implemented load shedding as a necessary step to maintain overall grid reliability. Throughout the event NERC's Situation Awareness Team monitored conditions and coordinated with representatives from the Federal Energy Regulatory Commission, the Department of Energy and the Department of Homeland Security.

In addition to enforcing compliance with our mandatory standards NERC has a rigorous program to analyze electric system disturbances to determine what happened and root causes to uncover lessons learned and to issue relevant findings to industry as advisories, recommendations or essential actions.

On February 7, 2011 NERC announced that we examined the bulk electric system performance during the extreme weather conditions to determine the adequacy of preparations and potential improvements.

On February 11, we issued a letter providing formal notice of our intent to conduct an analysis and notified the applicable registered entities to secure and maintain all documents and data associated with the event. We plan to determine the causes of various generation and transmission issues that occurred on the bulk electric system and what steps need to be taken to minimize the risk of these scenarios occurring in the future. As warranted by our findings, NERC may at some point open compliance enforcement proceedings in these matters.

I'm most concerned that the industry has experienced cold weather issues in the past. NERC will be evaluating what we can do to ensure the institutional memory needed to avoid such incidents in the future. For example, in January 2007 there was a cold weather event impacting Arizona's Salt River Project. Extreme cold weather, loads greater than forecasted and the loss of 8 critical generating resources created a shortage.

In February 2006, Public Service Colorado experienced electric generation plant failures due to the combination of cold weather, high humidity and other mechanical issues. During the event a total of 18 generators tripped off line or were capacity limited.

In January 1994 an Arctic deep freeze hit the Midwest and Mid Atlantic States. Utilities faced unusually high demands for electricity and cold weather related problems with generators and fuel supplies.

Although it is too early to conclude the causes of the events of early February 2011, we need to ensure that our electricity generation and delivery equipment are adequately winterized to operate dependently when needed.

We will also be reviewing the impacts of interdependencies between the electric system and natural gas supplies and pipelines including the extent to which reduced gas supplies may have impacted generator availability or the extent to which rotating black-outs may have affected gas pipeline compressors. Our review will be conducted in close coordination with FERC's inquiry into these matters and our results will be made available to FERC. FERC's review is much broader and includes many areas beyond NERC's jurisdiction as you will hear from Mr. McClelland.

NERC views the cold weather impacts of February 2011 as significant. We are acutely aware of the impacts and frustrations that occur when the electric system does not provide a reliable service to end use customers. I am further concerned that these issues are not new. Severe weather has happened before and will happen again. We must ensure the industry is learning and that institutional knowledge is retained.

Thank you. I look forward to your questions.

[The prepared statement of Mr. Cauley follows:]

PREPARED STATEMENT OF GERRY CAULEY, PRESIDENT AND CHIEF EXECUTIVE
OFFICER, NORTH AMERICAN ELECTRIC RELIABILITY CORPORATION

Good morning Chairman Bingaman, fellow panelists and those joining us in the audience. My name is Gerry Cauley and I am the President and CEO of the North American Electric Reliability Corporation (NERC). I am a graduate of the U.S. Military Academy, a former officer in the U.S. Army Corps of Engineers, and have more than 30 years experience in the bulk power system industry, including service as a lead investigator of the August 2003 Northeast blackout and coordinator of the NERC Y2K program.

Background

NERC's mission is to ensure the reliability of the bulk power system of North America and promote reliability excellence. NERC was founded in 1968 to prevent cascading outages like the one that occurred in November 1965 and overall to ensure reliability of the bulk power system. The bulk power system is defined as generation and transmission of electricity greater than 100kV, in contrast to the distribution of electricity to homes and businesses at lower voltages.

In 2006, NERC was designated the Electric Reliability Organization (ERO) by the Federal Energy Regulatory Commission (FERC) in accordance with the Energy Policy Act of 2005, and NERC's reliability standards were approved by FERC and became mandatory across the bulk power system in mid-2007. In carrying out its activities, NERC works with and through its regions and stakeholders, which include large and small customers and state regulators in addition to investor-owned utilities, municipal utilities, co-ops, independent generators, power marketers, ISOs and RTOs, and federal entities like TVA, Bonneville and the Western Area Power Administration. Equivalent entities from Canada are also a part of NERC's stakeholders.

As part of NERC's mission to ensure the reliability of the bulk power system in North America, NERC conducts detailed analyses of system disturbances to determine root causes, uncover lessons learned, and issue relevant findings as advisories, recommendations and essential actions to the industry. Through the analysis by NERC and the Regional Entities, possible violations of standards may be revealed. If such violations are identified, they are addressed through NERC's Compliance Monitoring and Enforcement Program.

The bulk power system in North America is one of the largest, most complex, and most robust systems ever created by man. It provides electricity to more than 334 million people, is capable of generating more than 830 gigawatts of power, moves that electricity across more than 211,000 miles of high voltage transmission lines and represents more than \$1 trillion in assets. The electricity being used in this room right now is being generated and transmitted in real time over a complex series of lines and stations from possibly as far away as Montana or British Columbia.

The knowledge that disturbances on the grid can impact operations and customers thousands of miles away has influenced the electric industry's culture of coordinated planning, operations and protecting the bulk power system.

NERC's event analysis process reviews numerous events that occur on the bulk power system. These events can range from loss of a single component to loss of large amounts of load or generation. The events analysis process provides us with a path to learn from what happened with the goal of sharing those lessons with others to prevent it from happening again.

The key ingredients of an effective event analysis program are to:

- Identify what transpired-sequence of events;
- Understand the causes of events;
- Identify and ensure timely implementation of corrective actions;
- Develop and disseminate recommendations and valuable lessons learned to the industry to enhance operational performance and avoid repeat events;
- Develop the capability for integrating risk analysis into the event analysis process; and
- Distribute key results to facilitate enhancements in and support of the various NERC programs and initiatives (e.g., performance metrics, standards, compliance monitoring and enforcement, training and education, etc.)

As a learning organization, NERC's event analysis serves an integral function of providing insight and guidance by identifying and disseminating valuable information to users, owners, and operators of the bulk power system that enable improved,

enhanced and more reliable operation. As such, event analysis is one of the pillars of a strong ERO.

NERC's February 2011 Inquiry

Ice, snow, and extreme cold weather severely affected multiple regional entities and multiple states in early February which led to high customer demand for electricity and the significant unexpected loss of generation capacity. As a result, operators issued Energy Emergency Alerts (EEA), public appeals for reduction of electricity use, and ultimately implemented extensive load shedding to maintain grid reliability.

Throughout the event, NERC's situation awareness group, in coordination with the Regional Entities and reliability coordinators who direct grid operations, received information on the current state of reliability and the impact to the bulk power system in the affected areas. This information was shared through established communication processes with representatives from FERC, the Department of Energy (DOE) and the Department of Homeland Security (DHS). On February 7, 2011, NERC announced it would examine the bulk power system impacts from the recent extreme weather conditions to determine the adequacy of preparations and potential improvements. On February 11, 2011 NERC issued a letter providing formal notice of its intent to conduct an Event Analysis on the preparation and performance of the system during these cold weather events. As part of this notice, NERC requires applicable registered entities impacted by the February event to secure and maintain all documents and data associated with the event to support the event analysis.

The NERC inquiry encompasses two efforts to meet both short-term and long-term objectives related to the event.

The first is a formal analysis to identify the causes of the various generation and transmission issues that occurred on the bulk power system related to the February event, determine what steps need to be taken, and communicate lessons learned from the event to minimize the risk of these scenarios recurring in the future. The Texas Reliability Entity, Inc., and the Western Electricity Coordinating Council, along with affected entities and system operators, are already working with NERC on analysis of the events. While controlled rotating interruptions are deployed by system operators as a means to maintain bulk power system reliability by providing adequate levels of operating reserves, further review is underway to determine what happened in these specific circumstances, and to identify lessons learned and improve future operations.

Secondly, for a longer term outlook, NERC's Reliability Assessment and Performance Analysis group will review the projected electric and gas interdependencies and vulnerabilities given the shift toward greater reliance on natural gas to produce electricity in certain areas. This assessment will be a broad look at areas in North America where extreme cold weather or loss of a major gas supply could impact electricity production, review existing procedures for coordination between planners and operators in both industries and input into NERC's standards if needed. Building upon NERC's 2010/2011 Winter Reliability Assessment, which noted the long-term outage of gas pipelines or import paths could lead to the loss of significant amounts of generating capacity, NERC will identify the reliability affects of gas/electricity interdependencies through multiple scenarios, including extreme cold weather scenarios, pipeline interruption, and overall vulnerability identification across North America. Further, NERC will develop an industry reference guide in coupled workings of the bulk power and natural gas systems.

Past cold weather events

While the depth and pace of the severe cold temperatures were an unusual event, cold weather events have occurred before. It is important for the NERC analysis to review what was done correctly in this event, as well as what can be improved upon so other users, owners and operators of the bulk power system facing cold waves in the future can learn from the impacts of this event. It is essential to identify what changes can be made from a process-perspective to appropriately anchor these learnings to preclude similar future events. For examples, some past cold weather events include:

- In January 2007, there was a cold weather event impacting Arizona's Salt River Project SRP). The extreme cold weather, loads greater than forecasted, and the loss of eight critical generating resources forced adjacent control areas into a "capacity limited" condition. Backup generation failed to start, which exacerbated the situation.
- In February 2006, Public Service Colorado (PSCO) began to experience electric generation plant failures due to the combination of cold weather, high humidity

and other mechanical issues. During the event, 18 generators tripped off line or were capacity limited. The controlled load shedding conducted by PSCO involved approximately 100,000 customers for approximately 30 minutes each.

- In 1994, a major cold wave swept across the Midwest and Mid-Atlantic states. Utilities were faced with unusually high demands for electricity and cold weather related problems with generators and fuel supplies. Two control areas had to resort to manual curtailment of firm customers resulting in rotating outages to ensure the reliability of the bulk power system. Significant amounts of electricity were transferred to the Midwest and East that were running short of generation capacity.

Assembly of the basic facts, including load, resources, reserves, generator availability, fuel supply and delivery problems, the effectiveness of public appeals, curtailment of interruptible loads and rotating outages were all reviewed. These issues resulted in recommendations and lessons learned. In 1994, use of NERC's Operating Criteria and Guidelines, along with industry's own practices and procedures were found to contribute positively to the resolution of this event.

This history is not presented as an exact comparison to what occurred in February 2011. It is offered to emphasize a number of questions that must be answered. We need to understand the unique circumstances of the cold weather event that impacted much of New Mexico and Texas, and determine why lessons from the past were either unable to be applied or were not applied in this event. Were there problems with the electric/gas interfaces? Why were coal plants affected? Was this an issue solely about winterization of equipment? Why was this not addressed? What was the timing? In answering these questions, NERC will look at all regions affected by this event to identify those steps that may not have been taken, as well as steps that were taken to protect the reliability of the bulk power system.

NERC's Events Analysis Process

Working with teams in each of NERC's eight regions, NERC experts have analyzed numerous events. System owners and operators are required to report the occurrence of defined bulk power system disturbances and unusual occurrences to the applicable Regional Entity and NERC in accordance with various NERC and Regional reliability standards and other requirements. Each of these standards specifies timeframes within which initial and final Event Reports are required. Additional reporting requirements may also be required.

Operators of the system, Regional Entities and NERC need to become aware quickly of events and disturbances that take place throughout the bulk power system. This 'initial impression' information and insight needs to be produced and delivered quickly and made available to personnel with planning and operations responsibilities across the system. This initial information sets forth a workable structure for very short-term analyses and reports, which can be followed by more intensive studies.

During the event triage process, NERC's events analysis staff and the involved Region(s) collaboratively determined the appropriate level of any event analysis that should be conducted. Most single-Region analyses are conducted by the Regions or, for less significant events, the registered entity with overview by the Region and NERC. Multi-regional events such as this recent event fall under the direction of NERC events analysis.

The ERO enterprise-wide event analysis program is based on the recognition that bulk power system events that occur, or have the potential to occur, have varying levels of significance. The manner in which system owners and operators and NERC evaluate and process these events is intended to reflect the significance of the event or specific system conditions germane to the reliability of the bulk power system and the circumstances involved.

The role of NERC and its coordination with other organizations

Numerous organizations have indicated their interest and concern over the February 2011 events. As noted, NERC and the Regions review these events, and have an established process for the analysis of the event and the issuance of lessons learned. Successful event analysis relies on effective coordination through which registered entities, Regional Entities, and NERC work together to achieve a common goal. The process requires clarity, certainty, and consistent adherence to reliability principles by bulk power system operators that perform a wide array of reliability functions.

FERC provides oversight and in most cases, closely participates in these efforts, including whether aspects of those events constitute possible violations of reliability standards. FERC and NERC have different areas of responsibility. As the economic regulator, FERC has the responsibility for wholesale electric markets and oversight

of interstate gas transmission as well as oversight of NERC for bulk power system reliability. NERC's responsibilities are directly focused on analysis of the specific system conditions and their impact to the reliability on the bulk power system.

On February 14, FERC issued an order directing its staff to initiate an inquiry into outages and disruptions of service in Texas and the Southwest. The FERC order recognized the importance of NERC's analysis and also FERC's jurisdiction under the Natural Gas Act and the Natural Gas Policy Act. Per FERC's order, FERC's broader inquiry is to be coordinated with NERC's efforts, as well as inquiries by affected States. We expect the coordination of this process between FERC and NERC will be similar to what was used for the 2003 Northeast blackout. During that effort, FERC performed an inquiry; while NERC performed events analysis and submitted it to FERC for their use as needed. Both FERC and NERC share a commitment to ensure the reliability of the bulk power system.

Conclusion

I want to reemphasize that NERC views the cold weather impacts of February 2011 as significant. We are acutely aware of the impact and frustration that occurs when the electric infrastructure does not provide reliable service to end-use customers. While NERC is focused on the impacts to the bulk power system, when events such as this occur on a multi-state, multi-regional level, it is clear there are numerous lessons to be learned. The events of February 2011 give me cause for significant concern. These are not new issues. We've had severe weather before. We must continue to ensure industry is learning from the past, and must not allow institutional knowledge to fade. These issues must be kept at the forefront.

The CHAIRMAN. Thank you very much.

Mr. McClelland, with the Federal Energy Regulatory Commission, thank you for being here.

STATEMENT OF JOSEPH MCCLELLAND, DIRECTOR, OFFICE OF ELECTRIC RELIABILITY, FEDERAL ENERGY REGULATORY COMMISSION

Mr. McCLELLAND. Mr. Chairman, Senator Udall, Congressman Luján and Congressman Heinrich, thank you for this opportunity to appear before you to discuss natural gas service disruptions in New Mexico and the large scale disruptions of both electric and natural gas services in the broader Southwest region of the United States.

My name is Joe McClelland. I'm the Director of the Office of Electric Reliability at the Federal Energy Regulatory Commission. I'm accompanied here today by my colleague Jeff Wright, Director of the Office of Energy Projects.

During the first week of February unusually cold weather spread across much of the United States. For instance temperatures were 20 degrees below normal throughout the Southwest. Large parts of Texas experienced sub freezing temperatures for 70 consecutive hours.

Deliveries of natural gas were disrupted in New Mexico, Texas and elsewhere in the Southwest, the supply from the San Juan and Permian Basins declining by as much as 33 percent. Roughly 28,000 customers in New Mexico were without service during this period. Approximately 19,000 customers lost service, gas service in Arizona. In addition the power system in Texas and Arizona experienced a loss or partial loss to as many as 82 generating facilities during a period of high demand for electricity from customers.

These outages and disruptions of service affected many customers throughout the region. Approximately 1.5 million electricity customers experienced an outage during this time. When we were at the very early stages of data gathering preliminary information from ERCOT indicates that within ERCOT as many as 80 gener-

ating units tripped, could not start or loss partial capability on February 2nd, including several large coal fired units totaling approximately 4,800 megawatts. Approximately 70 gas fired units totaling 9,200 megawatts and an undetermined amount of wind and other sources.

Outside of ERCOT preliminary reports state that the El Paso Electric lost several generating units which coupled with high demand required the shedding of load of approximately 50 to 100 megawatts on several occasions. In total there were approximately 350,000 customers out at varying times between February 2nd and February 4th. Also on February 2nd, the loss of several generating units in Arizona required rolling outages affecting 65,000 customers.

In New Mexico 80 megawatts of generation was lost. Between February 3rd and 4th the California Independent System Operator had to reduce 1,000 megawatts of generation and initiate public appeals for conservation in the Imperial Valley area. Although no firm service electric customers were interrupted. It would be premature at this time to make definitive statements about the causes of the outages and disruptions in service. Although the winterization of the generators, generation capacity and fuel procurement and a gas pipeline scheduling arrangements are certainly subjects of interest.

On February 14, 2011 the Commission initiated an inquiry into these matters. The inquiry has 2 objectives.

First, the Commission seeks to identify the causes of the disruptions.

Second, it seeks to identify any appropriate actions for preventing a recurrence of these disruptions.

The Commission's priority at the moment is to gather the relevant facts, identify the problems and fix them to the extent possible. Under section 215 of the Federal Power Act the Commission has oversight authority over the reliability of a bulk power system through mandatory and forceful standards developed by the Electric Reliability Organization which is the North American Electric Reliability Corporation. As the ERO, NERC independently initiated its own analysis of the problems in the bulk power system relating to these events. The Commission has broad responsibilities and authorities under the Natural Gas Act and the Natural Gas Policy Act as well as jurisdiction over the reliability of the bulk power system.

We plan to ascertain how disruptions or reductions in service by natural gas pipelines as well as interruptions to the bulk power system under our jurisdiction occurred. The task force has invited NERC and its regional entities from Western Electricity Coordinating Council and the Texas Regional entity to participate in our efforts and hopes to be able to call upon all of their resources during this inquiry. Similarly we understand that the affected States have initiated or may initiate their own inquiries.

The Commission recognizes that some of the natural gas service disruptions and electric outages affected facilities that are not within the Commission's jurisdiction. That is disturbances on intrastate pipelines performing purely intrastate service on natural gas or electric distribution facilities which are within the State's au-

thority. The Commission staff task force will be most effective if it can coordinate our efforts closely with the States and their regulatory authorities and exchange relevant information. This will enable all interested authorities to timely and efficiently determine what went wrong and how to prevent a returns.

In view of the wide ranging circumstances to the disruptions to the bulk power system and to the provision of natural gas described above, the Commission will designate a staff task force to conduct this inquiry. A staff task force has been directed to report its findings and recommendations to the Commission as soon as practical. Once the Commission receives this report the Commission will determine the appropriate course of action to pursue.

Although I do not have enough information to state what actions are recurrent to these problems today this will be a primary objective of our initiative. Thank you again for the opportunity to testify today. I would be happy to answer any questions you might have.

[The prepared statement of Mr. McClelland follows:]

PREPARED STATEMENT OF JOSEPH MCCLELLAND, DIRECTOR, OFFICE OF ELECTRIC
RELIABILITY, FEDERAL ENERGY REGULATORY COMMISSION

Mr. Chairman and Members of the Committee:

Thank you for this opportunity to appear before you to discuss natural gas service disruptions in New Mexico and the large-scale disruptions of both electric and natural gas services in the broader southwest region of the United States. My name is Joseph McClelland. I am the Director of the Office of Electric Reliability (OER) of the Federal Energy Regulatory Commission (FERC or Commission).

During the first week of February, unusually cold weather spread across much of the United States. For instance, temperatures were 20 degrees below normal throughout the Southwest, and large parts of Texas experienced sub-freezing temperatures for 70 consecutive hours. Deliveries of natural gas were disrupted in New Mexico, Texas, and elsewhere in the Southwest, with supply from the San Juan and Permian basins declining by as much as 33 percent. Roughly 32,000 gas customers in New Mexico were without service during this period. Approximately 19,000 gas customers lost gas service in Arizona.

In addition, the power system in Texas and Arizona experienced a loss or partial loss of as many as 80 generating facilities during a period of high demand for electricity from customers. These outages and disruptions of service affected many customers throughout the region. Approximately 1.5 million electricity customers experienced an outage during this time.

While we are at the very early stages of data gathering, preliminary information from ERCOT indicates that within ERCOT as many as 80 generating units tripped, could not start, or lost partial capability on February 2, including several large coal fired units totaling approximately 4,800 MW, approximately 70 gas fired units totaling 9,200 MW, and an undetermined amount of wind and other sources.

Outside of ERCOT, preliminary reports state that El Paso Electric lost several generating units which, coupled with high demand, required the shedding of between 50-100 MW of firm load on several occasions. In total, there were approximately 350,000 customers out at varying times between February 2 and 4.

Also, on February 2, the loss of several generating units in Arizona required rolling outages affecting 65,000 customers. In New Mexico, 80 MW of generation was lost. Between February 3 and 4, the California Independent System Operator had to reduce 1,000 MW of generation and initiate public appeals for conservation in the Imperial Valley area, although no firm-service electric customers were interrupted.

It would be premature at this time to make definitive statements about the causes of the outages and disruptions in service although the winterization of the generators, generation capacity and fuel procurement, and the gas pipeline scheduling arrangements are certainly subjects of interest.

On February 14, 2011, the Commission initiated an inquiry into these matters. The inquiry has two objectives. First, the Commission seeks to identify the causes of the disruptions. Second, it seeks to identify any appropriate actions for preventing a recurrence of these disruptions. The Commission's priority at the moment is to gather the relevant facts, identify the problems and fix them, to the extent possible.

Under section 215 of the Federal Power Act, the Commission has oversight authority over the reliability of the Bulk-Power System through mandatory and enforceable reliability standards developed by the Electric Reliability Organization (ERO), the North American Electric Reliability Corporation (NERC). As the ERO, NERC independently initiated its own analysis of the problems on the Bulk-Power System relating to these events. The Commission has broad responsibilities and authorities under the Natural Gas Act and the Natural Gas Policy Act, as well as jurisdiction over effects on the reliability of the Bulk-Power System. We plan to ascertain how disruptions or reductions in service by natural gas pipelines as well as interruptions to the Bulk-Power System under our jurisdiction occurred. The task force has invited NERC and its regional entities, the Western Electricity Coordinating Council and the Texas Regional Entity to participate in our efforts and hopes to be able to call upon all of their resources in our efforts.

Similarly, we understand that the affected states have initiated or may initiate their own inquiries. The Commission recognizes that some of the natural gas service disruptions and electric outages affected facilities that are not within the Commission's jurisdiction, i.e., disturbances on intrastate pipelines performing purely intrastate service or on natural gas or electric distribution facilities, which are within the states' authority. The Commission's staff task force will be most effective if it can coordinate our efforts closely with the states and their regulatory authorities, and exchange relevant information. This will enable all interested authorities to timely and efficiently determine what went wrong and how to prevent a recurrence.

In view of the wide-ranging circumstances of the disruptions to the Bulk-Power System and to the provision of natural gas described above, the Commission will designate a staff task force to conduct this inquiry. This staff task force has been directed to report its findings and recommendations to the Commission as soon as practicable.

Once the Commission receives this report, the Commission will determine the appropriate course of action(s) to pursue. Today, however, I do not have enough information to state what actions would help prevent a recurrence of these problems.

Thank you again for the opportunity to testify today. I would be happy to answer any questions you may have.

The CHAIRMAN. Thank you very much. Thank you all for your testimony. Let me start with a few questions and then refer to Senator Udall for his questions.

One obvious question that is embedded in all that went on here is the whole issue of to what extent did the failure of gas supply here in New Mexico result from a loss of electrical power in Texas?

To what extent did the loss of electrical power in Texas result from a loss of gas production, I guess, in Texas or New Mexico, in the San Juan Basin or the Permian Basin or anywhere else? I don't know, Mr. Dumas, you might be the right person to ask that question to.

As you understand the situation was—were the rolling blackouts that you folks ordered in Texas a cause, approximate cause, of the loss of natural gas here in New Mexico?

Mr. DUMAS. I do not know the answer to that question. We ordered firm load shedding that goes out to the wires companies who have certain breakers that they open and certain loads that they put on the rolling blackout. It's usually the rolling blackouts are typically 20 to 30 minutes in length when they rotate through your breakers.

I don't know what circuits are on those designated circuits that they trip. To your earlier—well and I will say that the outages that we ordered began at 5:44AM. We were able to end those rolling blackouts at 1:07PM. So that was the timeframe.

I'm not familiar with the outages in New Mexico so I don't know how those timeframes correspond, so.

The CHAIRMAN. So am I right that you, in the 7 and a half hours that you had these rolling blackouts going in Texas, the gas com-

pressor stations that were dependent upon electricity were in fact experiencing those blackouts?

Mr. DUMAS. It is possible. I'm not familiar with the Permian Basin area. I do know that we did receive some calls in the Dallas area that there some compressors that had went off and on call was working to restore those in that area. But I'm not familiar with the Permian Basin area.

The CHAIRMAN. OK, let me ask the folks here representing the 2 pipeline companies that are involved here. As I understand what I think I heard from both of you. The compressors that you folks own and operate were not in fact impacted by the rolling blackouts.

Was that what you said or do you not know that?

Ms. CORMAN. No, that is correct, Chairman and Senator. We did not experience any power outages on our compressors on the Transwestern pipeline system. The folks that put the supply gas into the pipeline, the processing plants, interconnected facilities, they may have had power outages that influenced their ability to put gas into the system. But we do not have firsthand information about that.

The CHAIRMAN. Let me ask Mr. Dumas, just—and then I'll get to El Paso. But I was asking about compressor stations. How about processing plants? They're also subject to the blackouts as you understand it?

They're not on any priority for avoiding blackouts in Texas, is that right?

Mr. DUMAS. I'm not aware of any priority there. The priorities and like I said earlier, there's some guidelines that are part of the Public Utilities Commission. Those guidelines define critical circuits which tend to be more the hospitals and the nursing homes and those types of circuits.

We reviewed that and gas compressors are not on that list of critical circuits. So I think that's—

The CHAIRMAN. Gas compressors are not.

Mr. DUMAS. Right.

The CHAIRMAN. Processing plants are not either as far as you know.

Mr. DUMAS. Far as I know they're not.

The CHAIRMAN. Yes. Let me ask about El Paso. Did you experience any interruption of electrical service on any of the facilities that you operate?

Ms. PARKER. Mr. Chairman and Senator Udall, we did on a handful of units. As far as we can tell and we're still investigating it, it wasn't a result of any of the rolling blackouts that the ERCOT organization initiated. We did have some interruptions from El Pas Electric, EXCEL Energy and a company called Continental.

The CHAIRMAN. These were interruptions to the power at your compression stations?

Ms. PARKER. Yes, sir.

All of our compressor stations are gas driven compressor stations. But you have electricity to auxiliary equipment like cooling fans or controls. At many of our compressor stations we have gas fired back up generators in case things go down.

Unfortunately at one of our stations I know of our generator was damaged through surges in the electricity because the electricity

was going off and on for a period of 2 days. However I'll say with respect to our service, the outages were fairly limited in nature and things that we could overcome through our backup generators. What we primarily saw, and this is anecdotal information we got through telephone calls to the processing plants is that they were the primary parties affected early in the morning of the second, either by El Paso Electric's outages or the rolling blackouts.

We can't tell and don't have any firsthand knowledge which of those were the electricity issues that then allowed freeze ups to happen or it could have been just cold weather mechanical issues.

The CHAIRMAN. But you believe that the interruption of supply that you described for us earlier was gas coming from the processing units. The processing units were affected by the loss of electrical power. Is that what I'm understanding?

Ms. PARKER. Yes, Mr. Chairman. That's what we understood from the processing plants we talked to.

The CHAIRMAN. So you think there was a connection between the loss of electrical power at the processing units and processing plants and their ability to get gas to you for delivery to New Mexico?

Ms. PARKER. Yes, sir, Mr. Chairman, I do. Again that's based on the plant communication, verbal communications to us, not any analysis or in depth information that we have. Unfortunately what happened and nobody knew the extent of either the loss of electrical power to these processing plants, when it was going to be restored, if it had been restored in a few hours I think, you know, things would have been OK.

But unfortunately with the cold temperatures and the gas just sitting in the line then they started becoming ice plugs in the gathering lines. So when some of the processing plants tried to come back up and we contacted them every few hours to see what the status was of some of the bigger ones. Unfortunately some of them couldn't come up for as much as 2 weeks because of damage they had. Some of them—

The CHAIRMAN. So they just came up in the last few days you're describing?

Ms. PARKER. A couple of them did, yes, sir. Some of them were ready to come up within a day or so, but then the gas freeze offs were worse and they didn't have any gas to put through the plant. So it was a variety of combinations that we heard of in our conversations with those plant operators.

The CHAIRMAN. Let me ask Transwestern. Did you have any knowledge of this issue of some of the supply that you were expecting or normally would get into your system was also impeded by the fact that these processing plants didn't have electrical power?

Ms. CORMAN. Yes.

Similarly to what El Paso stated we have notes and—of records of telephone conversations and what not where we were discussing with the processing plant why the gas wasn't coming into the system. They would report that they had power problems. But also they had problems with their equipment given the cold temperatures.

I think the only other point that I would make is that on the day of February 2nd, the supply shortfalls on our system about half of

it was in San Juan. Half of it was in the Permian Basin, so certainly not all of the supply shortage related to Texas power outages and weather conditions in Texas. Quite a bit of it also related to weather conditions in the San Juan Basin.

The CHAIRMAN. OK. The shortages or the supply disruption in the San Juan Basin was not a result of any electrical failure but was a result of just general cold weather? The processing plants were not, are not equipped to handle cold weather.

Is that what you're saying?

Ms. CORMAN. I don't know the answer to that, Mr. Chairman. I would only be speculating.

The CHAIRMAN. OK. Let me ask any of our other witnesses if they have some wisdom to give us on any of these questions that I've been asking questions about here?

Yes, go right ahead, Mr. Cauley.

Mr. CAULEY. Chairman Bingaman, we're obviously are still early in our data gathering and assessment and analysis. I think there are many stories to be told in this one. I think even the testimony this morning throws into question that the preplanning in terms of the electric supplies to processing plants and compressors.

However, most of the information that I have received to date does not point to that as the primary culprit. Even though it's a practice that we've known for many years, at least 10 years that I'm aware of, that we would give priority to gas pipeline processing and compressors. But I think the primary culprit from at least what I've heard initially is just purely the cold weather affecting the auxiliary equipment at the power plants as well as the well heads for the gas supply and as well as the processing plants.

I think to some extent the electric and gas systems share a lot of common features of pipes and tubes and equipment that's exposed to the cold weather. It just throws into question what weather that equipment was adequately winterized for the severe temperatures that we saw. So at this point, for me, from a NERC perspective, the jury is still out in terms of the actual impacts between electric and gas.

If we haven't learned a lesson by now making sure that the gas infrastructure has a high priority for electric supply than I certainly intend to make that a priority coming out of this incident.

The CHAIRMAN. Mr. McClelland, do you have anything to—and let me just ask you to just address the issue of whether or not—I mean, NERC has authority or responsibility for the reliability of the electrical system in the country, the electrical grid. Does FERC consider itself to be the agency with responsibility for the reliability of the natural gas distribution system in the country?

Mr. MCCLELLAND. Let me back up just for a second as far as the relationship between FERC and NERC. NERC is the Electrical Reliability Organization. FERC is the Regulatory Agency that oversees NERC's efforts.

FERC also has 3 types of jurisdiction. It has original, concurrent and also appellate. In this particular case, FERC is exercising its original jurisdiction into the inquiry.

So we are using and coordinating with NERC and their regional entities. But we're by no means stepping aside as far as the electric

reliability because it does tie to your question. It does tie to the natural gas.

There were at this point it's very dangerous to draw conclusions. But there are strong indications that as Mr. Cauley mentioned, the winterization of plants, the electric plants, was a culprit, but also the gas supply. So if for instance in the Permian Basin and not in the San Juan Basin, but in the Permian Basin if there were electrical outages and I could see from the chart here that it does look like there were facilities or there were pockets of generation that were implicated in that basin.

If they affected the production then the line pack would have been depleted. Supply would not have been put into the line. That then affects the generator.

In some ways it's a vicious cycle because the generators weren't winterized. They didn't startup the generators that would have been starting up or called into action may not have been able to start because of low gas supplies. Additional generation may have been tripped off and was not a result of the electrical interruptions in the Permian Basin.

That's an important question. My colleague, Mr. Wright may have something to add to this. But he also passed a note to me to explain that FERC does not have jurisdiction over the processing plants. There are eight gas fields and 2 gathering pipes and they are not FERC jurisdictional.

So the inquiry, the structure of the inquiry is particularly important because we'll need the State's assistance to pull information about those facilities.

The CHAIRMAN. So there is no Federal oversight or regulatory authority over gas processing plants? Is that correct?

Mr. MCCLELLAND. Yes.

The CHAIRMAN. Let me defer to Senator Udall for some questions.

Senator UDALL. Thank you, Senator Bingaman. That was an excellent line of questions and I think very revealing there.

Mr. Schreiber, could you talk a little bit, I see at least one of the mayors here and I know Governor Dasheno is here, about the issues that they raised in terms of their communities? They raised a number of questions about notification and could this have been done better. People on the ground, the first responders if they'd been told as early as possible that they were going to have a 5-day/6 day loss of natural gas they would have done things completely differently.

I think some of them feel, you know, why them? Why a community in Questa? Why a community in Taos? Why the Santa Clara Pueblo?

I think as I described to you at one point these are very rural communities. It's very hard to locate individuals. The gas company people, my understanding, were circulating asking the street addresses.

Many of the places don't function on street addresses. You'd have to have somebody that really knows and apparently the actual natural gas meter people were someplace else. You weren't utilizing the same people.

Then I think they also raised the question they offered help. They had people in their community. I think the chamber of commerce witness, many people were saying we want to help you and their sense was you didn't need their help. So could you try to answer some of those?

Mr. SCHREIBER. Yes, certainly. I think to start off on your point on communication. We need to improve that. OK? Let me start right there.

We did send out some notice early in the morning on February 3rd. Obviously it wasn't extensive enough. Obviously we did not have the right processes in place to have a blast type of broadcast to emergency responders to local communities to that kind of thing.

So that is very high on our agenda to be able to make sure that we contact the local authorities, the local first responders as well as the Governor's office and the State resources to be able to get the word out as quickly as possible. We were laboring under the assumption early in the morning on February 3rd that we were going to get a second delivery of gas. Now, that being said, we probably should have been out and in more detail in touching all the bases that needed to be touched.

We did get out in the—around 8:15 on the morning of February 3rd to contact the Pueblo leadership. We had been out the night before at about 3AM. The Otero County emergency coordinator we had been contacting.

But during that timeframe when we thought we were going to be getting gas. Hindsight is 20/20. As we look back we probably should have been talking to other communities.

To your question as to why the communities and where we curtailed and where we didn't. We basically had to move very quickly. We basically had between 20 minutes and 30 minutes to try to shed load.

We saw the pressure on the Taos main line which leads up to the areas that was most affected. That the pressure at around 8AM or very shortly thereafter was dropping dramatically. We had to act to see if we could shed load because we had to stabilize the system.

In other words we had to put the amount of demand on the system and the amount of supply we had to get them back into equilibrium. Because what was happening at that point on the morning of the 3rd was that demand was so extraordinary and the gas was not coming in that we had to shed load. It is extremely unfortunate that we had to do that.

It was probably the toughest decision our operating people have ever had to make. But we had to find valves that we could turn quickly to try and reduce that load. The 2,000 Bernalillo, the one on the Taos main line we could get to within the timeframe we needed to get to. Because what was in jeopardy was a loss of the entire system.

As I said in my statement if we had lost the Bland to Santa Fe corridor in addition to Bernalillo and Placitas we'd be re-lighting people probably for the next month and a half. So what we're trying to do is preserve as much as we could.

Senator UDALL. Can I just stop you there for 1 minute?

Mr. SCHREIBER. Yes.

Senator UDALL. In hindsight looking at it and looking at what you know about these sparsely populated areas and the ability of the people to go out and find and shut off and then re-light and all of that. Is that the decision you had to make was the decision for that area of Northern New Mexico along that line or could have it been other areas that you could have taken that action where it would have resulted in fewer people without gas for that lengthy period of time?

Mr. SCHREIBER. Unfortunately the way the system is currently designed and again this is what I mentioned in my statement. We are looking at how we are better able to isolate our system. OK?

The system that we had on February 1st, 2nd and 3rd did not have isolation points in the urban areas where you could take out a block quickly but then be able to re-light that block quickly. When I'm talking about a block it might be, you know, 5,000 customers or 10,000 customers. So what we were faced with with the system that we purchased that did not have the isolation ability which would have been able to promote exactly what you're suggesting.

We are looking at that right now. We are going to put in valves around the system so that we are able to isolate other parts of our system and not have to isolate like the valve on the Taos main line which allows us to try and get the system in balance at that point. So yes, we know that that is something that needs to be addressed. That is definitely in our planning as we look out forward to make sure that we minimize the amount of re-light.

Senator UDALL. How about this whole issue of offers of assistance in that?

Mr. SCHREIBER. We've, as you know, and I think everybody knows we have put together a relief fund. We are the only utility that has done that. In any other outage whether electrical or gas there has been no other utility that we've been able to find to my understanding and the research that we've done to this point that has ever done any kind of voluntarily relief effort.

We are addressing this relief fund to those who were the hardest hit. As you and I have spoken before, we are very sensitive to the economic situation in the northern part of the State. We know that for a lot of our customers if they get a \$50 or \$100 plumbing bill that is a big deal. OK?

We had voluntarily tried to put money into this fund to help those kinds of folks that are most in need.

Senator UDALL. My understanding is that you've put in a million dollars to try to take care of these personal and individual losses. Is that correct?

Mr. SCHREIBER. That's correct.

Senator UDALL. You have asked Transwestern and El Paso to also match, each of them, to match you. Is that correct?

Mr. SCHREIBER. Yes. I think we have been asking. Yes, sir.

Senator UDALL. Yes. The reason you're doing that is because based on past kinds of situations you believe the amount will actually be closer to \$3 million than to \$1 million.

Mr. SCHREIBER. We're getting the process going right now, Senator. We have about 800 claims at this point. We're starting to work through those.

We've already worked through—we had over 50 red tag claims. In other words, when we got into re-light we found we couldn't re-light. It was not safe.

So we sent on our own cost back into these 50 or 55. I'll have to get the exact number for you. But it's in that neighborhood. Licensed folks to go in, fix the appliance that was unsafe so that the customer was back on line. We've already taken care of that.

Yes, we're just, as I said, it's a relief fund that we're trying to, you know, provide for the folks that really are the most in need to help them try to get through this whole situation.

Senator UDALL. Now the chamber official raised the issue of a small business that is not going to be covered by business interruption insurance. Are you hearing that testimony today? Are they going to be allowed to apply to this fund? If they can show that they don't have insurance are they going to be able to recover?

Mr. SCHREIBER. We have split the process into a residential process and a commercial process. Yes, we will be accepting claims from those people.

Senator UDALL. I hope that Transwestern and El Paso would be receptive to your appeals especially to match you in terms of the dollars. Because as this moves along and you're not able to satisfy the claims out there with the money that's up there it would make sense to me to have them or others try to help you help you out.

Now on offers of assistance and I'm going to turn back to Senator Bingaman now. Others, the mayor said they offered you also assistance in terms of re-lighting or anything like that. Why didn't you take them up on that?

Mr. SCHREIBER. We tried to take up as much assistance as we can. We had 1,100 folks on the ground in the re-light process which included National Guard, local police, State police, fire departments. Part of the issue is the safety requirements of our business, Senator, dictate that the folks that are handling meters, re-lights and those kinds of operations have to be licensed and qualified to have been trained and the safety requirements of our business say that that's a fact.

So while we had a whole lot of folks show up, we didn't have licensed folks to pair them up with. I mean we had licensed technicians in here, in the State of New Mexico from ten different States. SUNCO Energy, our Michigan company sent 69 people down here to help on the re-light process.

But what we had to do is we tried to build on local knowledge and match them up with our technicians to try and be as productive and efficient as possible in this re-light. Did we underestimate it? Yes, we did.

But I think, you know, while it is unacceptably long, there is no question about that. We had a lot of folks that were working 14, 16, 20 hour days. The 19,000, we've heard that it was 15,000. But 19,000 gas customers that were out in Arizona they were re-lit by Tuesday the 7th. Our 28,707 were re-lit by—I mean on Monday. Our 28,000 were re-lit on Tuesday.

So we had a whole lot of folks that were working very hard to get our customers back on because we knew what they were up against. We were very sympathetic to that and we were trying like the devil to get them back on.

Senator UDALL. Thank you. I assume we're

Mr. SCHREIBER. Senator, could I just make——

Senator UDALL. Yes, please.

Mr. SCHREIBER. OK. Just one comment and Ms. Parker mentioned an electricity supplier named Continental, OK? It has nothing to do with my business or New Mexico Gas. I don't know who that Continental Company is, but it is not my company. I just wanted the record to reflect that.

Thank you, Senator.

Senator UDALL. Thank you. Thank you very much.

The CHAIRMAN. Let me ask a couple more questions. Then Senator Udall, I think, has a few more as well.

You know we spent a lot of time in Washington talking about the Strategic Petroleum Reserve. The obvious question is why wasn't there more storage of natural gas available to deal with this problem when the inadequate supply was coming into these pipelines? Now you indicated that El Paso Natural had a storage unit down by Carlsbad which is called Washington Ranch Storage Facility?

Ms. PARKER. Yes, Mr. Chairman.

The CHAIRMAN. But that's the only storage that I've heard discussed here today. Let me ask does Transwestern have any storage of natural gas that they could have brought on line to deal with the shortfall of supply?

Ms. CORMAN. Mr. Chairman, Senator, Transwestern does not own any gas storage facilities. We are interconnected with a gas storage facility in Texas. In fact many of our customers ordered gas from that storage facility during these winter weather events.

However, that storage facility was one of the underperforming supply locations on our system. Much of the gas shortfall on the gas day of the 2nd and the 3rd of February was because we were not getting the volumes out of the storage field that we expected.

The CHAIRMAN. Let me just ask again from El Paso's point of view. You had no problem getting gas out of your storage facility. You just ran out of stored gas. Is that right?

Ms. PARKER. We didn't have any problems, Mr. Chairman, getting gas out of our storage field throughout the event. We didn't run out of gas. There's always a maximum withdrawal capability that the storage field is designed for. We ran at the maximum every day until it——

The CHAIRMAN. So you were taking it out of your storage facility as fast as you could.

Ms. PARKER. Yes, sir.

The CHAIRMAN. But that was not enough to keep the gas supply that you needed in your pipeline.

Ms. PARKER. It wasn't enough to offset the shortfalls we experienced in the Permian supply or the San Juan supply completely.

The CHAIRMAN. Let me ask Mr. Schreiber. Just from a logical point of view it would seem to me that a utility might consider storage facilities for natural gas. Is that something that you contemplated or is that not done by utilities or what's your view on that?

Mr. SCHREIBER. No, Senator. It is done by utilities. In fact, New Mexico Gas Company contracts with Chevron for 2.2 billion cubic feet of storage which is in the Permian Basin.

That storage was impacted on the morning of the 2nd of February for about 3 hours. But then the——

The CHAIRMAN. By impacted you mean?

Mr. SCHREIBER. An electric shortage.

The CHAIRMAN. So they were unable to provide anything from that storage facility.

Mr. SCHREIBER. Make a withdrawal, to withdraw. But then it performed well after it got past the first rolling blackout. We believe it was from El Paso Electric.

To your general question about storage for utilities. Yes, it is something, in fact our sister company in Alaska is investing in an 11 BCF storage facility. It's \$180 million investment.

One of the things that we're going to be doing in New Mexico Gas is looking to see if there is geology available in the State of New Mexico, like a depleted reservoir or a salt dome formation where we could create, own and operate our own storage facility depending on, you know, for just these kinds of circumstances.

The CHAIRMAN. Alright. Let me call on Senator Udall for any additional questions he has.

Senator UDALL. I would want to turn to our 2 witnesses with NERC and FERC. Ask the issue here and I think Senator Bingaman's done a very good job in his questioning of emphasizing reliability and reliability of the system. We all know from the witnesses we've heard here today how important it is to have reliability.

If the system fails we hurt business. We hurt small business. We hurt people, the disabled people and you know, you heard all of the stories.

What, from what you have heard today at the testimony. I don't want to get into your investigations and where you're headed. But I think Mr. McClelland you talked a little bit about things that needed to be looked at.

From the testimony today what does this tell you about reliability? What does this say about what we need to do in terms of the system? Should there be new Federal reliability standards to cover the interdependency of electricity in the natural gas supply infrastructure?

Mr. MCCLELLAND. I think from the testimony I heard today I didn't hear that the electric compressors on the pipelines were impacted. That's not really a surprise. That seemed to be what was coming back to us from preliminary information.

I also heard somewhat of a validation that the Permian Basin was impacted by the blackouts or by electrical outages or maybe perhaps winterization of the facilities themselves, lack of winterization that caused gas production to decline.

Prior to that and it's something that Mr. Cauley made the point about and I'll second again here is that the winterization of the electric generation facilities is of particular importance. There were scheduled outages of about 12,000 megawatts, but there were forced outages in excess of, well, there was about 4,000 megawatts of coal fired power plants for instance that were out and 9,000 megawatts of gas powered facilities that were out. The primary causes that we're hearing at this point were not because of gas shortages. They were because of lack of winterization.

There are—I'm sorry.

Senator UDALL. Yes. No, just to stop you a second.

When you say winterization we mean something as simple as with the outage being caused by a pipe bursting and not having thermal tape on that pipe because if you'd had thermal tape or something along that line, the pipe would have been able to continue to function. You would have been able to then get the electricity out that was needed. Simple things like that, right?

Mr. McCLELLAND. That's exactly correct.

Senator UDALL. Yes.

Mr. McCLELLAND. Typically I mean, I asked staff to put together a dirty dozen of the winterization items that we know at this time. We fell short on time. We have about 9 right now.

But it is primarily water systems, you know, the systems that pipe water and then a lack of insulation or heat tape or, you know, some sort of anti-freezing mechanism associated with it. So we saw failures of the power plants in mass. Those failures may have then impacted the Permian Basin which then impacted the line pack which then impacted the gas pressure and the downstream results where it interrupted customers, those distribution customers.

There are winterization requirements and standards. They're not specific, but they're there. So one of the places that we will look at what did the folks and how did they interpret those standards. What winterization measures did they take?

Another important point and it's in Mr. Cauley's testimony. I'll point this out as we move toward single source fuel dependency and Mr. Chairman, you touched on this when you spoke of the storage facilities. But as we move toward single source fuel dependency for these electric generators once they're onsite storage mechanism if they're bidding firm power into the market, but they're buying interruptible gas is it really firm power?

If they need the firm power perhaps they should have onsite storage. Perhaps there should be distillate onsite, 3 day supply of distillate dual fuel facilities in order to facilitate continuance of operation, a continuity of operation to keep the natural gas supply from interrupting. So there's a lot of pieces at this point.

I'm not here to draw conclusions. Happily answer any of the pieces at this time. I think what we really need to do is get the comprehensive inquiry.

It needs to span more than the electric and more than gas. It needs to explore the interdependencies. It needs to look at what the communication protocols were, what the arrangements were for buying the natural gas.

Was it bought in interruptible basis or was bought on a firm basis? Then how did that transpire the next day? What were the root causes of the interruptions? Who affected who as we move down the line for this interruption?

Mr. Cauley may want to add to this.

Mr. CAULEY. Senator Udall, I would concur with Mr. McClelland's response.

The 2 things I take away principally the first being the winterization of equipment. When we bring in a lot of new generation and looking at competitive markets, winterizing a plant is probably one of the places where you can save money and be more efficient cost

wise. But in my view it's a low cost thing that can be done to the plant to assure that it's available during extreme cold weather. So I think we'll be looking at that. I would extend that beyond just the electrical plants though to the gas well heads and refineries and the storage to ensure that all essential infrastructure performed in extreme cold weather.

The second issue which has been raised which is clear is the interdependency. There may be an opportunity to improve our standards in that area to obviously the practice has been well known for a number of years. But evidently there's an opportunity to do much better in terms of assuring that we don't cutoff electrical supply to processing plants and storage facilities.

Senator UDALL. Thank you very much. Just one additional question to Mr. Schreiber.

Mr. Schreiber, you mentioned in your testimony I think on page 2 you're talking about once in a 50 year event, I believe and a winter storm of historic proportions. Then on the next page you talk about half way down that you routinely, the New Mexico Gas Company, routinely monitors long and short term weather forecasts. I assume as part of that that you're monitoring what all the scientists are telling us in terms of climate change that we are going to get more severe winter incidents in the future.

Is that correct? Is that something you're also looking at? I mean because we've had here in New Mexico over 100, you know, 100 year events in terms of floods, catastrophic fires that people that have been looking at forest fires for 30, 40 years say we've never seen anything like this.

I would assume in this situation, the winter weather, where from what the scientists are telling us we're going to see things like that. Is that something you're looking at in terms of these short term and long term weather forecasts and putting that into the equation?

Mr. SCHREIBER. I'm afraid, Senator, we're a little more myopic than that, you know. We're not at this point as concerned of the impact of the global climate change on our delivery weather. When I say long term, you know we may be looking out a month or 2 and trying to determine whether La Nina—and now I'm getting into things I don't really know a whole lot about but the La Ninas and El Ninos and all that business and how it's going to impact weather patterns.

Then on a short term basis, as I said, January 30/31 we were studying that storm. We could see that this storm was going to be something like we haven't seen in a long, long time. But in terms of the huge picture of global climate change, you know, we don't, you know, individually I'm sure some of my colleagues do and I do. But we're much more focused on how we're going to keep 500,000 customers with gas in their homes when they most need it, so.

Senator UDALL. I want you to do that. But I think what scientists are telling us is that, you know, this 50 year event, we may see 50 year events much more frequently.

Mr. SCHREIBER. Right.

Senator UDALL. We want the system, as I was talking to these gentlemen here to be reliable in those kinds of circumstances. That's really the point, I think.

Mr. SCHREIBER. Right.

From a business point of view, Senator, we are doing that. We are looking at storage. We're looking at propane air. We're looking at possibly LNG. We're looking at other ways that we can provide greater operational capability to minimize the risks that we have in delivering gas. So that is all part of the equation. If the weather is going to be much more volatile and much more extreme we're going to have to start planning our businesses to be able to undertake, to operate in those kinds of conditions.

Now I will also tell you that if we were to have the system capable of withstanding the kind of event that occurred there on the first of February, you are talking about millions and millions of dollars of capital expenditures to get the system to where we had redundancies in pipelines, where we had storage facilities, where we had more valves, where we had more supply, you know. It would be a huge undertaking on the part of New Mexico Gas to try and get the risk down to zero on that kind of event. So there is judgment on what our plant and our operations need to be to withstand those kinds of storms. We thought we were in pretty good shape. But we couldn't get the gas.

Senator UDALL. Thank you to all the witnesses.

The CHAIRMAN. Let me just ask one other question.

Now Mr. Dumas, you were, as you're well aware, whenever there's a crisis people try to use it to make a point that they were trying to make before the crisis occurred. One of the allegations that I heard right after the rolling blackouts occurred in Texas was that the EPA regulations were what were causing these rolling blackouts. That generators were not able to generate power as they would otherwise be generating it because of excessive regulation by the Environmental Protection Agency. Is there anything to that?

Mr. DUMAS. No, Mr. Chairman, we didn't see any evidence of that being a factor. All the planned outages so far that the reports that we've gotten are related to frozen instrumentation and weather related.

The CHAIRMAN. Let me ask one other question. There was also an allegation thrown around that Texas' heavy reliance on wind energy generation was part of the problem here. That if Texas just didn't have so many wind farms there wouldn't have been any problem.

Have you analyzed that?

Mr. DUMAS. We have, Mr. Chairman. Wind was actually producing pretty well during this event. I have a chart and I regret that I didn't put it in the presentation, but I'd be glad to give you a copy.

It produced between 3,000 and 2,500 throughout the event.

The CHAIRMAN. So rather than being part of the problem it was trying to help avoid the problem? Is that what you're saying?

Mr. DUMAS. It was producing very close to the expected forecast for wind. So the megawatts that it produced were utilized during the capacity shortage situation. So it performed pretty well during this event.

The CHAIRMAN. Alright. I appreciate that, and I appreciate all of you testifying.

I think it's been a useful hearing. It's gotten a lot of questions raised. Obviously we don't have the answers to the questions, but I'm encouraged by the fact that we have some studies and investigations going forward and we look forward to the results of those.

We look forward to putting in place the procedures and precautions to prevent this from ever happening again. So thank you all very much. That will conclude our hearing.

[Whereupon, at 12:57 p.m. the hearing was adjourned.]

[The following statement was received for the record.]

STATEMENT OF DAVID W. STEVENS, CHIEF EXECUTIVE OFFICER, EL PASO
ELECTRIC COMPANY

Chairman Bingaman and Senator Udall, thank you for the opportunity to submit a written statement to the Committee on behalf of El Paso Electric Company (EPE). My name is David Stevens, and I am the Chief Executive Officer of EPE.

EPE is a vertically integrated electric utility that provides electric service to parts of far west Texas and southern New Mexico. EPE is one of three investor-owned utilities providing electric service in the State of New Mexico. EPE operates within the southwestern corner of the Western Electricity Coordinating Council (WECC), a regional reliability entity of the North American Electric Reliability Corporation (NERC). In light of the heat typically experienced in this part of the nation, EPE, like its neighboring electric utilities, is a summer-peaking utility.

For the Committee, I would like to address the series of abnormal weather events that occurred in this part of the country during the first week of February 2011, the impact of those events on EPE, and EPE's response to those events. By way of overview, it appears this weather event was the worst in at least 45 years. Based upon the information known at this time, the phenomenally cold weather (over 60 continuous hours at temperatures below 18 degrees Fahrenheit) and severe wind effects negatively impacted a generation fleet that is primarily designed to withstand excruciating summer temperatures, and not prolonged subfreezing temperatures in the low teens and single digits. Like those of EPE, many generating plants in Texas, New Mexico, Arizona, and in the northern Mexican cities of Juarez and Chihuahua (our neighbors to the south), experienced difficulties with generation. To maintain system stability, EPE was required to undertake controlled load shedding during peak usage times to help compensate for the loss of our local generation. Fortunately, the weather did not cause any loss in transmission. Our backbone 345 kV transmission system, which connects us to our remote generation in Arizona (Palo Verde) and New Mexico (Four Corners) and to the rest of WECC, weathered the storm without incident, thereby allowing us to maintain system integrity throughout this unprecedented severe weather event.

Although EPE is a summer-peaking utility, each year EPE winterizes its generating plants prior to the beginning of the winter season. This winterization process encompasses, among other things, verifying that heat tracing and heat strips are properly functioning as well as making sure that insulation is properly installed at all of EPE's local generation facilities. EPE also verifies that equipment in its substations, the element of the transmission and distribution systems historically most susceptible to cold temperature extremes, can withstand projected winter temperatures. During the final weekend of January 2011, EPE was monitoring the actual weather and the forecast, as is our standard procedure. The weather forecast indicated significantly colder weather than normal for this time of year. Thus, on January 31, 2011, prior to the onset of this weather event, EPE initiated its severe weather preparations, which included verifying winterization of generation and identification of transmission and distribution facilities that could be impacted by ice and high wind loading; reviewing system operations plans; contacting the operator of EPE's Palo Verde generating facility to make sure the units were not experiencing any issues; reviewing the availability of natural gas for use in our gas-fired generating facilities; preparing for potential constraints in the gas pipelines that serve EPE; and putting employees on call as needed during the weather event. EPE's System Operations group requested that EPE's Power Marketing & Fuels group keep additional generation on-line. The Power Marketing & Fuels group complied with that request as early as January 31 for projected loads for Wednesday, February 2, when the anticipated severe weather was forecasted to begin. In addi-

tion, they contacted natural gas pipeline personnel at El Paso Natural Gas (EPNG)¹ and WesTex Gas (Westex) for status updates of their efforts to maximize line-pack in their pipelines in preparation for cold weather. On Monday, the operator at EPE's Newman generating plant was told to prepare for the possible need to burn fuel oil in the event natural gas supply was interrupted. We also increased natural gas nominations on the Westex pipeline, as a back-up measure, to ensure sufficient supply and pipeline pressure in the event of EPNG gas curtailments. On Monday, EPE personnel developed plans to procure daily natural gas from Keystone and Waha basins to avoid potential curtailments due to wellhead freezes in the San Juan basin.

Unfortunately, not only did the temperature drop to record levels and much lower than forecasted on January 31, but the wind was blowing at average speeds of 10 to 20 mph, with wind gusts at much higher speeds, creating very low wind chills—and hazardous conditions for the employees working outside. The strong wind rapidly dissipated heat around key power plant components and accelerated the temperature drop of those components. Because of our climate, most generating plants in this region, including those in EPE's service territory, are not enclosed and are designed primarily to withstand extremely hot summer temperatures but not extreme levels of sustained subfreezing temperatures. Thus, as the temperature rapidly fell into subfreezing levels, equipment at our generation facilities began to freeze. Not only did critical water lines freeze, but instrumentation that controls the generation froze as well. Facing wind chills as low as minus 17 degrees and battling single digit temperatures and harsh wind, EPE's employees worked around the clock during the entire event in an effort to thaw and repair equipment and to bring the generation plants back on-line. Yet, the success of thawing one piece of equipment was met with the freezing of another component. Even the backhoes needed to dig out broken pipes would not operate because their hydraulic components were frozen.

During the afternoon and evening of February 1, the weather deteriorated significantly, with temperatures dropping from 31 degrees at 4 p.m. to 18 degrees at 10 p.m. Temperatures remained below 18 degrees for the next two and a half days, with a low temperature of 1 degree recorded on February 3, 2011, and 3 degrees on February 4, 2011. The maximum air temperature of only 15 degrees on February 2, 2011, was the coldest maximum (high) temperature ever recorded in our service territory. Records were set on February 2, 3 and 4. The low temperature each of those days was the lowest temperature ever recorded in our region on that particular day in El Paso and southern New Mexico history.

As a result of the almost unprecedented conditions, EPE lost most of its local generation fleet over a period of hours beginning Tuesday evening and into early Wednesday, thereby reducing EPE's load-serving capability. EPE did have approximately 55 MW of local generation from its combustion turbine, Copper (63 MW rated capacity), running throughout the severe weather event and even during the worst portion of the weather. Copper, combined with purchases from generation resources in south-central and southwestern New Mexico, provided dynamic reactive voltage support. That voltage support made it possible for EPE to import power for delivery over its 345 kV transmission system—most notably, power from EPE's remote generation at Palo Verde and Four Corners—and to successfully maintain system integrity.

On February 2, 2011, EPNG issued an Operational Flow Order (OFO) for an Emergency Critical Operating Condition (COC). The OFO was issued to direct EPNG customers to stop taking more gas off of the pipelines than they had scheduled. EPE had properly maintained its natural gas schedules on EPNG's pipeline in the event local generation was returned to operation. Thus, with the weather's continued impact on EPE's local generation, EPNG was able to make use of the approximately 130,000 MMBtu of natural gas in the pipeline from February 2 through the end of the COC on February 5. If EPE's local generation had remained operational and able to burn natural gas throughout the severe weather, EPE would not have been able to provide this benefit to the pipeline.

On Wednesday, our Power Marketing & Fuels group directed a portion of EPE's natural gas supply to Tri-State's Pyramid generating station to replace Tri-State's fuel oil supply that was being used to produce energy for delivery to EPE. We also communicated closely with Texas Gas Service and made arrangements in the event EPE needed to supply natural gas to Texas Gas Service on an emergency basis. We worked with Public Service Company of New Mexico (PNM) to implement a natural gas agreement so that, if needed, natural gas could be directed to PNM's Afton and Luna generating stations.

¹Despite the similarity in names, El Paso Electric Company and El Paso Natural Gas Company are not, and have never been, affiliated.

During February 2 and 3, and part of February 4, EPE continued to struggle against extreme weather conditions to return more local generation to service. EPE employees and contractors, working in extraordinarily harsh weather conditions, sought to protect critical equipment and sensors from freezing by working throughout the emergency to thaw out and repair the frozen equipment and sensors.

When it became apparent that the Company's local generation would not be quickly returned to service, and as load increased coincident with peak usage, we began to reduce load in order to maintain system stability. First, we curtailed our interruptible customers who, as part of their contract with us and in exchange for a lower rate, allow EPE to interrupt them for up to a certain number of hours per year. In addition, between the hours of 7 a.m. to 12 p.m. and 6 p.m. to 10 p.m. on February 2, 5:30 p.m. to 10:30 p.m. on February 3, and 6:30 a.m. to 12 p.m. on February 4, the Company executed controlled load shedding to further reduce the strain on the system and to help protect the health and safety of our customers and avoid the risk of system collapse. This was undertaken consistent with EPE's Electric Service Emergency Operations Plan (Plan).

EPE's Plan was adopted to comply with the Public Utility Commission of Texas (PUCT), Substantive Rule (SR) §25.53, Electric Service Emergency Plans. The PUCT rules define, among other things, "critical loads." These are loads that are considered crucial for the protection or maintenance of public health and safety, including, for example, hospitals and fire stations. The PUCT rules require electric utilities such as EPE to maintain a registry of such critical loads and customers and to have emergency load shedding procedures, which EPE had in place and executed in this instance. EPE's Plan is on file with the PUCT. Pursuant to the Plan, EPE updates its registry of critical loads as needed and at least annually. EPE applies its Plan to its entire system in Texas and New Mexico.

Consistent with federal and state reliability regulations and to preserve the integrity of its system, EPE maintains the capability to manually drop customer loads. This is done at a "feeder level" and the number of customers dropped at any given time depends on how many are served from the feeder. (The granularity required to drop individual customers is not available on EPE's system.) Customer load shedding occurs during Emergency Conditions only after other measures have been attempted or completed.

EPE's manual load shedding protocol is designed so that electrical feeders are grouped into 35 "blocks" that contain about 50 MW of load based on summer peak demand. EPE's System Operations Department utilizes pre-defined and prioritized protocols to shed load blocks in a controlled manner, beginning with the first group and then rotating into the next group, and so on, where feasible. When the system is operating at its limit, and all other authorized avenues of relief have been utilized, shedding customer load is a last resort to avoid a more severe and widespread disturbance. The goal of controlled load shedding is to keep the entire electrical system stable so that it does not go into an uncontrolled blackout under the loss of a critical transmission element.

EPE's Plan contains a list not only of the critical load customers but also of what feeders serve them. There are currently 109 such feeders, up from 85 in 2008. Feeders that are identified as serving a critical loads are given high block numbers (blocks 18 and above.) This list of feeders and customers has been developed, refined and updated over the years to identify (and to add to or replace) those customers for whom continued service is considered crucial to the maintenance of public health and safety. There are five general categories of such customers: Hospitals, Dialysis Centers, Radio and TV Stations, certain Government Agencies (for example, fire departments, police dispatchers, airports, prisons), and certain Water Utility Stations and Plants. Other customers can contact the Company if they believe they qualify for treatment as "critical" to the maintenance of public safety.² For example, an industrial customer might qualify as a critical load customer under the PUCT's rules if it could show that an interruption would create a dangerous or life-threatening condition on the customer's premises. A review of our records reveals no request made by a natural gas pipeline or utility for a facility in our service territory to be classified as critical load. Thus, none were classified as such.

During emergency conditions, blocks number 1 through 17 will each be dropped by EPE System Controllers in a rotating fashion for about an hour or less at a time to lower and balance the load on EPE's system and enhance the stability and security of the entire EPE system. In carrying out the controlled load shed, EPE operators cycle the areas being dropped across the EPE system to minimize the overall impact on individual customers. This controlled load shedding is done (and was done

² Even though EPE has placed these critical facilities at the bottom of the manual load shedding list, they will be shed if required by the severity of the Emergency Conditions.

during this severe weather event) on a non-discriminatory basis across the entire system in both New Mexico and Texas, with the exception of those circuits identified as containing critical customers. On February 4, EPE was able to return 300 MWs of generation to service and eliminate all controlled load shedding. On February 5, the Company was able to allow most customers that are served on interruptible rates to return to their normal operations, and all such customers were allowed to return to their normal operations by February 6.

As a result of the advance planning of the various EPE departments, and the effort and extraordinary support of EPE employees and contractors, as well as the cooperation of public and private organizations, businesses and individuals, EPE was able to maintain system integrity by using our transmission lines connecting us to the rest of WECC to bring in power from EPE's own remotely located generation as well as purchased power. The Company received tremendous cooperation from all of our neighbors including, but not limited to, PNM, Southwestern Public Service Company (SPS), Arizona Public Service Company (APS), Tri-State Generation & Transmission, and Tucson Electric Power Company (TEP). In addition to these parties, WECC, the States of New Mexico and Texas, and all of our counties and cities quickly mobilized as requested to assist EPE and our customers. Working through the various emergency management systems and the media, we were able to communicate with the various constituencies.

We understand the concern from the Committee, regulators, the public, and our customers. Clearly, we never want to interrupt electric service to a customer when it can be avoided. On this occasion, we fortunately were able to maintain the integrity and stability of the electrical system so that any disruptions due to events beyond EPE's control, and resultant public safety impacts, were minimized. Nonetheless, EPE is committed to finding out what we and the industry can learn from this unprecedented weather event.

Chairman Bingaman and Senator Udall, these are the chain of events that occurred. Our purpose in the near-term is to address what actions we can take in the future to minimize such impacts to our customers when such severe weather occurs.

APPENDIX

RESPONSES TO ADDITIONAL QUESTIONS

RESPONSES OF JOSEPH MCCLELLAND TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. NERC was designated the Electric Reliability Organization (ERO) by the FERC in accordance with the Energy Policy Act of 2005. In that role, NERC works with all stakeholder segments of the electric industry to develop standards for reliability planning and reliable operation of the bulk power systems. Are there similar standards applicable to reliability planning and reliable operation of the interstate natural gas pipelines? If not, how is reliability planning and reliable operation of the interstate natural gas pipelines established and by whom?

Answer. In the Energy Policy Act of 2005 (EPAct 2005), Congress conveyed a major new responsibility to oversee mandatory, enforceable reliability standards for the Nation's bulk power system (excluding Alaska and Hawaii). This authority is in section 215 of the Federal Power Act (FPA). Section 215 requires the Commission to select an Electric Reliability Organization (ERO) that is responsible for proposing, for Commission review and approval, reliability standards or modifications to existing reliability standards to help protect and improve the reliability of the Nation's bulk power system. The Commission has certified the North American Electric Reliability Corp. (NERC) as the ERO. The reliability standards apply to the users, owners and operators of the bulk power system and become mandatory in the United States only after Commission approval.

The Commission may approve proposed reliability standards or modifications to previously approved standards if it finds them "just, reasonable, not unduly discriminatory or preferential, and in the public interest." The Commission itself does not have authority to modify proposed standards. Rather, if the Commission disapproves a proposed standard or modification, section 215 requires the Commission to remand it to the ERO for further consideration. The Commission, upon its own motion or upon complaint, may direct the ERO to submit a proposed standard or modification on a specific matter but it does not have the authority to modify or author a standard and must depend upon the ERO to do so.

Currently, the Commission's jurisdiction and reliability authority is limited to the "bulk power system," as defined in the FPA. This term excludes facilities used for local distribution as well as any facilities located in Alaska and Hawaii. The interpretation of "bulk power system" in effect at this time also excludes certain transmission facilities. Under this interpretation, the "bulk power system" excludes virtually all of the grid facilities in certain large cities such as New York, thus precluding Commission action to mitigate cyber or other national security threats to reliability that involve such facilities and major population areas.

In contrast, the interstate natural gas pipeline industry that is under FERC's jurisdiction does not have a reliability organization that is similar to the ERO. The industry does, however, have the North American Energy Standards Board (NAESB) which develops certain industry-wide standards for the interstate natural gas pipeline industry, but those standards mostly pertain to business practices such as nominations, scheduling, penalties, billing, capacity release, and what information needs to be posted on a pipeline's electronic bulletin board. These standards must be approved by the Commission and are then incorporated by reference into the Commission's regulations governing jurisdictional gas pipeline tariffs. The tariffs are only applicable to those entities that engage in jurisdictional transactions covered by these tariffs.

For the interstate pipeline system, we rely primarily on the experience and expertise of pipeline operators to maintain and manage their pipelines in a manner that will promote system reliability for the customers. The pipelines determine what facilities are required to serve their customers, and they decide when a facility needs repair or upgrade.

Although FERC does not directly oversee pipeline reliability as it does for the bulk electric system, it does promote system reliability through its oversight of interstate pipeline tariffs and service agreements. Each interstate pipeline under FERC's jurisdiction operates under a FERC-approved open access tariff, which is a document that delineates what services the pipeline offers, what rates it may charge, and other operational parameters. Under Part 284 of the Commission's regulations, interstate pipelines are required to offer both firm transportation and interruptible transportation services. Together the pipeline tariffs and service agreements delineate the limits of each shipper's service as well as their mutual rights and obligations. The numerous terms and conditions of service set forth in a pipeline's tariff are implemented to assure a reliable service to the shipper. These include scheduling requirements, the establishment of hourly flow restrictions and implementation of operational procedures should system integrity of a pipeline be compromised. These terms and conditions of service are necessary because the pipelines do not own the natural gas they transport, and to the extent a shipper violates these terms and conditions, it can have service implications for the pipeline's other shippers. In a sense, even though FERC does not have direct jurisdiction over system reliability for interstate gas pipelines, it regulates and oversees pipeline tariffs and service agreements in a manner that promotes system reliability.

Question 2. Are there any regulatory requirements that direct communications between interstate gas pipeline operators, natural gas processing facilities and the ultimate recipients of natural gas shipments?

Answer. Yes, certain regulations require or govern communications between these entities. As stated above, NAESB is a non-profit standards development organization that serves as an industry forum for the development of business practice standards. NAESB has developed a number of business practice standards that the Commission has incorporated by reference into its regulations, thus making compliance with these standards an enforceable and mandatory Commission requirement for jurisdictional transportation service under the gas pipeline tariffs. NAESB has established standards for interstate natural gas pipeline business practices and electronic communications and has periodically updated the standards. The currently effective version is 1.9, which the Commission incorporated by reference in May 2010.

The NAESB business practice standards establish uniform practices and standards governing the format and content of communications between the pipelines, producers, and wholesale gas customers. While the standards apply only to pipelines, they, of course, control the communications from the pipelines to all parties. For example, the standards contain a dictionary of terms, and prescribe how gas is nominated for transportation and delivery, including timeframes for nominations, confirmations, responses and scheduling. They also prescribe information to be posted on gas quality, billing, delivery mechanisms, and capacity releases. In addition, NAESB has adopted specific standards regarding communications between the pipelines and electric transmission and generation utilities, which the Commission has incorporated by reference in both its natural gas and electric regulations.

Question 3. Can FERC discuss how, generally, plans for firm load curtailment are crafted? How often are these plans updated? Are they reviewed by the state regulatory commissions or any other regulatory bodies? How are critical facilities identified and prioritized for the purposes of such plans?

Answer. FPA section 215 provides that, in the event of system emergencies, Transmission Operators and Balancing Authorities (Balancing Authorities balance electric load and resources, mainly generation, in an assigned area) on the bulk power system are required by reliability standard EOP-001 (Emergency Operations Planning) to have emergency plans. (EOP-001 was developed by NERC's standards development process and approved by FERC.) This standard also requires that in developing these emergency plans, entities consider, among other things, fuel supply and inventory, load management and voltage reductions, and load curtailment. Attachment 1-EOP-001-0 to EOP-001 describes load curtailment as "A mandatory load curtailment plan to use as a last resort. This plan should address the needs of critical loads essential to the health, safety, and welfare of the community. Address firm load curtailment." There is no further direction in the standard about "critical loads." The standard requires Transmission Operators and Balancing Authorities to review and update each emergency plan annually. The emergency plans are provided to the area's Reliability Coordinator and to neighboring Transmission Operators and Balancing Authorities. Compliance with the requirements of standard EOP-001 is primarily monitored and enforced by the Regional Entity for that area (there are 8 Regional Entities that cover the contiguous 48 states). NERC and FERC oversee the regional compliance and enforcement activities. In the majority of cases, the affected entities identify loads at the retail level that will be curtailed in the event of system emergencies. FERC does not generally require submission of

information on these plans for curtailing firm load and does not track whether each state reviews these emergency plans, and in particular the treatment of “critical loads.” Finally, apart from FPA section 215, the Commission has certain authority over curtailment plans under FPA section 202(g). The latter’s requirements appear to overlap significantly the requirements of EOP-001 as proposed by NERC and approved by the Commission, but the Commission has not reevaluated its pre-existing authority since approving EOP-001.

Question 4. What are the connections between FERC’s inquiry and NERC’s event analysis and natural gas study?

Answer. Although NERC has initiated an analysis of the problems on the bulk power system relating to the weather events in question, FERC’s jurisdiction is broader than that of NERC, and includes oversight of NERC in its role as the ERO. Moreover, FERC has responsibilities and authorities under the Natural Gas Act and the Natural Gas Policy Act that apply here, beyond issues solely related to the bulk power system. To avoid duplication of efforts, we are coordinating with NERC but our inquiry is broader and addresses not only the reliability of the bulk power system, but also examines the roles and responsibilities of natural gas pipelines under our jurisdiction. Both NERC and FERC are examining the interplay between the natural gas and bulk power segments of our energy infrastructure.

RESPONSES OF JOSEPH MCCLELLAND TO QUESTIONS FROM SENATOR TOM UDALL

Question 1. Are water utilities usually classified as critical infrastructure and protected from blackouts?

Answer. As explained in response to question 3 above, the Commission does not generally require submission of information on plans for curtailing firm load or “critical loads.” The vast majority of water utilities receive service at the retail level. Classification of retail loads as critical infrastructure is not jurisdictional to FERC and should be resolved between the water utility, the electric utility, and the applicable state public utilities commission.

Question 2. Are you going to consider classifying natural gas as critical infrastructure to be protected from rolling blackouts, at least during winter?

Answer. As part of the Commission’s inquiry into this outage, it will identify and examine the factors that caused this incident, including the interdependency of the Bulk Power System and natural gas pipelines. The purpose of this work will be to produce recommended actions to prevent a recurrence of this problem. As part of this initiative, we plan to consider how natural gas facilities were considered, and subsequently treated, during this system emergency. In this respect, I would highlight two sections in the reliability standards relevant to the designation of natural gas facilities as either critical loads or critical infrastructure.

First (as was detailed earlier), reliability standard EOP-001 requires the applicable entities to have emergency plans. This standard also requires that in developing these emergency plans, entities consider, among other things, fuel supply and inventory, load management and voltage reductions, and load curtailment. Attachment 1-EOP-001-0 to EOP-001 describes load curtailment as “A mandatory load curtailment plan to use as a last resort. This plan should address the needs of critical loads essential to the health, safety, and welfare of the community. Address firm load curtailment.” There is however, no further direction in the standard about “critical loads,” including whether or not natural gas facilities should be designated as such.

Second, the group of Critical Infrastructure Protection (CIP) NERC standards address the identification of assets by defining them as “facilities, systems, and equipment which, if destroyed, degraded, or otherwise rendered unavailable, would affect the reliability or operability of the Bulk Electric System.” Additionally, to identify which facilities are critical assets, the reliability standards implement a risk-based assessment that requires entities to consider the following assets: certain control centers and backup control centers, certain transmission substations, generation resources, systems and facilities critical to system restoration, certain systems and facilities critical to automatic load shedding, certain special protection systems, and any additional assets that support the reliable operation of the Bulk Electric System that the Responsible Entity deems appropriate to include in its assessment. These are not applicable to facilities outside the Bulk Power System, however, as each responsible entity must identify “its Critical Assets,” which implies that the only critical assets to be identified are the ones under the ownership or control of that entity.

It is important to note here, that although the standards can be modified to require that natural gas infrastructure be included as critical loads, the Commission does not have the authority to either author or modify these standards. By statute,

the Commission depends upon the ERO to accomplish this objective, which is subject to stakeholder vote through its reliability standards development process.

Question 3. This incident shows that the reliability of electricity and natural gas systems is intertwined. Is this a trend in the U.S. energy system?

Answer. Yes, there has been a trend for over a decade of more reliance by the electric industry on generation fueled by natural gas. Influences contributing to this trend include the lower emissions of natural gas-fired generation, less difficult siting and permitting of natural gas-fired generation, increased supplies of natural gas, and lower up-front capital cost to construct natural gas-fired generation. This single-source fuel dependency can present challenges such as larger generation losses through single-mode failures (i.e., gas pipelines), a lack of on-site fuel storage (if dual-fuel generation is not installed), constrained fuel infrastructure, and higher interdependencies between the generators and the gas pipelines.

Question 4. Do you have full authority for reliability within Texas electricity system and are you able to fully conduct investigations involving Texas?

Answer. Subject to the limitations of section 215 of the FPA that have been previously detailed, the Commission has electric reliability authority for the Bulk-Power System within Texas. Sections 215(b)(1) and section 215(k) of the FPA, 18 U.S.C. § 824o(b)(1) and 824o(k) (2006), provide that the Commission shall have jurisdiction, within the United States, except for Alaska and Hawaii, over the ERO (i.e., NERC), each Regional Entity, and all users, owners and operators of the Bulk-Power System, for purposes of approving reliability standards and enforcing compliance. Although the part of Texas that lies within the footprint of the Electric Reliability Council of Texas (ERCOT) generally is not subject to the Commission's jurisdiction over the sale for resale and transmission of electric energy in interstate commerce under Part II of the FPA, the Commission has section 215 authority over reliability of the Bulk-Power System within ERCOT as well as in the rest of Texas.

The Commission has full authority under section 215, other FPA provisions, and its regulations to investigate issues relating to reliability of the Bulk-Power System within Texas as well as in other states for purposes of its Southwest Inquiry. In particular, section 39.2(d) of the Commission's regulations, 18 C.F.R. § 39.2(d) (2010), requires all users, owners and operators of the Bulk-Power System, as well as NERC and the relevant Regional Entities, to provide the Commission with all information necessary to implement section 215.

Question 5. Does FERC have authority to look into market manipulation in Texas?

Answer. Section 1283 of the Energy Policy Act of 2005, as implemented by 18 C.F.R. § 1c.2 (2007), makes it unlawful to engage in market manipulation in connection with the purchase or sale of electric energy or the purchase or sale of transmission service subject to the jurisdiction of the Commission. The transmission grid that the ERCOT independent system operator administers is located solely within the State of Texas and is not synchronously interconnected to the rest of the United States. As a consequence, absent a jurisdictional nexus, the Commission generally does not have authority to prosecute market manipulation over the portion of Texas within the footprint of the ERCOT.

Question 6. As a general matter, if a state or electric grid system that is relatively isolated, like Texas, adds more interconnections to other grids, does that make them more resilient in the event of local power plant failures?

Answer. I believe that the answer to the question as stated is yes. However, a key phrase is "local power plant failures." There may be no benefit and in fact, there will be a detriment to reliability if a neighboring grid is experiencing similar or worse failures at the same time.

RESPONSES OF GERRY CAULEY TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. NERC's mission is to ensure the reliability of the bulk power system of North America and promote reliability excellence. Are there industry standards, requirements, or guidelines for weatherizing electric generating units? If no, how would NERC and stakeholders from within electric industry the industry go about creating new reliability standards to address weatherization, if necessary? If yes, how would those same entities go about revising them, if necessary?

Answer. Currently, there are no NERC reliability standards for weatherizing electric generation units. As noted in my testimony on February 21 in Albuquerque, the February 2011 extreme cold weather event analysis process may identify the need for such a standard. The development of any such standard, however, would need to be coordinated with other ANSI-accredited standards development organizations (such as the American Gas Association, the Institute for Electrical and Electronics

Engineers, the Society for Mechanical Engineers, and the North American Energy Standards Board) and with the manufacturers of and companies providing service to generating units to avoid the creation of conflicting requirements related to weatherization of electric generation units. Additionally, Section 215 of the Federal Power Act, which is NERC's enabling legislation, limits the scope and purview of what may be addressed in a NERC Reliability Standard to those matters necessary to provide for the reliable operation of the bulk power system.

NERC develops Reliability Standards using NERC's Reliability Standard development process, which is an ANSI-accredited process, and is outlined in NERC's Standard Processes Manual¹. NERC's standard development process is coordinated to avoid conflict with other ANSI-accredited standard development organizations and may entail developing standards jointly with another standards setting organization. For example, a NERC Reliability Standard may require generators to be installed to meet a range of predicted weather patterns, while another standard-setting organization may develop a construction standard identifying how to weatherize a generating unit.

A proposal to develop a new or revised reliability standard can be initiated at the request of any entity or individual. Some standards are proposed as a result of event analyses, some are proposed as a result of regulatory directives, and some are proposed as a result of other findings, such as an audit team finding that an existing standard needs revision.

The first step in developing a new or revised standard is to establish a technical basis for the new or revised requirements. In the case of generator weatherization, this could include analysis of the data from the recent cold weather events to assist in establishing the criteria generators would need to meet to remain connected under specific low temperatures. Once there is a technical basis for the development of the requirements, a proposal for the standard is submitted to the Standards Committee (with or without a set of proposed requirements) and then posted for stakeholder review.

If stakeholders agree on the scope of the proposed standard, a standard development project is initiated and, if not already in place, the Standards Committee will appoint a drafting team of experts to develop the standard. Upon development of the proposed standard, a ballot pool is formed from interested members of its registered ballot body. Approval of any standard action requires:

- A quorum, which is established by at least 75% of the members of the ballot pool submitting a response with an affirmative vote, a negative vote, or an abstention; and
- A two-thirds majority of the weighted segment votes cast shall be affirmative. The number of votes cast is the sum of affirmative and negative votes, excluding abstentions and non-responses.

Proposed standards are reviewed and approved by the NERC Board of Trustees, and are then submitted to the U.S. Federal Energy Regulatory Commission, Canadian provincial regulators, and the Canadian National Energy Board. Once approved by FERC, the standards become legally binding on all owners, operators and users of the bulk power system in the United States.

Question 2. Can NERC discuss how, generally, plans for firm load curtailment are crafted? How often are such plans updated? Are they reviewed by the state regulatory commissions or any other regulatory bodies? Does NERC have a role in crafting guidelines or standards for such plans? How are critical facilities identified and prioritized for the purposes of such plans?

Answer. Load shed plans have traditionally been the responsibility of the Load Serving Entity [utility] and developed in conjunction with coordinated emergency planning performed by state and local government agencies. This allows for local management and decision making on how to best plan for and implement emergency procedures if rotating blackouts are required. NERC's only role with regard to load shedding is to require that each Transmission Operator and Balancing Authority, working in conjunction with its Load Serving Entities, develop, maintain, and implement a set of plans for load shedding to be used as a last resort in managing electricity supply shortages in the event that becomes necessary. [Reliability Standard EOP-001-1, Requirement R2.3]

Electric utilities typically identify the circuits available for use in rotating outages in accordance with policies developed by state and local government agencies. Dis-

¹NERC's Standard Processes Manual was approved by the Federal Energy Regulatory Commission on September 3, 2010. NERC's Standard Processes Manual is available at: http://www.nerc.com/docs/standards/sar/Appendix_3A_Standard_Processes_Manual_20100903_2_.pdf.

tribution circuits (overhead or underground electrical lines that supply power to a combination of customers within a given geographical area) are classified by disaster importance and placed into groups that represent all customer types (i.e., residential, commercial and industrial) and are dispersed throughout a utility's service area. Each group includes a number of circuits that comprise a given number of megawatts of electricity usage per group (say 50 or 100 megawatts per group), with each circuit generally serving between 1,000 to 2,000 customers, depending on the nature of the utility's service territory and customer mix.

Most of an electric utility's distribution circuits are subject to firm load shedding (rotating outages) when a serious supply emergency arises. Under state public utility commission or local government rules or policies, only those circuits that serve specifically designated classes of customers who provide essential public health, safety, and security services (such as large hospitals, fire and police stations, 911 emergency control rooms, energy pumping stations, water and sewage treatment facilities, generating station auxiliary loads, TV/radio broadcast sites, key government sites, etc.) are exempted from rotating outages. Some of these circuits may also be interrupted if the supply emergency is serious and long-lasting enough. In those cases, circuits serving facilities that have their own independent back-up generators could be interrupted.

Plans for rotating outages are typically reviewed annually, and in some cases more frequently, by the distribution arm of each utility, with high level changes filed with the appropriate state or local government agencies. Some states have a mandatory utility disaster/major event/major weather plan requirement. In some cases, the governmental authority may set the criteria for what must be considered highly critical loads. Also, anytime a switching procedure moves a critical load to an adjacent circuit, the "new" feeder is added to the exempt list.

Question 3. What lessons were learned from cold weather events that impacted energy production in Arizona and Colorado in 2007 and 2006 respectively? Were changes required and implemented?

Answer. In January 2007, there was a cold weather event impacting Arizona's Salt River Project (SRP). The extreme cold weather, loads greater than forecasted, and the loss of eight critical generating resources forced adjacent control areas into a "capacity limited" condition. Backup generation failed to start, which exacerbated the situation.

In its review of the event, SRP determined its Valley plants experienced freezing of instrument sensing lines as a result of the 20-year freeze that occurred. SRP developed and implemented plans to insulate and heat trace all critical plant instrumentation to avoid this situation recurring in the future.

In addition, because dispatchers were not aware of the California Independent System Operator (CISO) Emergency Assistance procedure or impact to CISO System, they did not notify the Reliability Coordinator of the seriousness of the situation. Protocols were subsequently put in place and conveyed to SRP marketing and dispatching to notify the Reliability Coordinator prior to emergency energy requests.

In February 2006, Public Service Colorado (PSCO) began to experience electric generation plant failures due to the combination of cold weather, high humidity and other mechanical issues. During the event, 18 generators tripped off line or had their output limited. The controlled load shedding implemented by PSCO involved approximately 100,000 customers for approximately 30 minutes each.

PSCO and the Western Electricity Coordinating Council (WECC), separately and together, studied the event and developed recommendations in a number of areas, including: weather forecasting; protocols for gas control/supply, economic dispatch, energy trading, reserve levels and planning criteria; communications protocols between and among gas and electric arms of PSCO as well as with the Reliability Coordinator; power plant equipment modifications; procedures for identifying and communicating information regarding fuel-restricted generation resources; possibility of additional gas storage facilities; effect of the gas trading cycle on ability to procure additional gas supplies; and impact of air quality regulations during electricity supply emergencies.

It appears that the individual entities involved in these events identified the problems that led to the event and made appropriate changes. One focus of the current NERC inquiry will be to identify ways to share that learning more broadly, so that all entities subject to extremely low temperatures can take appropriate preventive action.

Question 4. What are the connections between NERC's event analysis and natural gas study and FERC's inquiry?

Answer. Operational coordination, communication, and cooperation between electric utilities and gas suppliers and pipelines is important during all conditions, especially when extreme weather has the potential to affect either or both electric and

gas infrastructures. In 1994, NERC and the Interstate Natural Gas Association of America (INGAA) recommended that electric and interstate natural gas pipelines, through NERC and INGAA, jointly review the reliability of electric supply to critical interstate gas pipeline facilities, such as compressor stations. Specifically, the recommendation stated that interstate gas pipelines should contact the electric utilities that supply electricity to these critical gas facilities and review cooperatively with them how that supply might be adversely affected during an electricity supply emergency; e.g., a rolling blackout or other emergency electricity interruption. The Natural Gas Council (NGC), on behalf of its member organizations—INGAA, the Natural Gas Supply Association, the American Gas Association, and the Independent Petroleum Association of America—has asked to work with NERC to gain a fuller understanding of what transpired during the cold snap in early February in the southwestern U.S. and to evaluate any and all measures that could be applied to prevent similar issues in the future.

NERC will perform a special reliability assessment that takes a broad view for the upcoming 10 years across all areas of North America. The assessment will include vulnerability studies where extreme cold weather or loss of a major gas supply could impact electricity production, review existing procedures designed to mitigate the reliability impacts from such events, identify opportunities for improved coordination and cooperation between planners and operators in both industries, and provide input into NERC's Reliability Standards, if required. Additionally, this reliability assessment will review the recommendations from the 2004 NERC study on gas and electric interdependencies provide an update and status on these recommendations, determine follow-on actions to fulfill recommendations, and present guidance to reduce potential vulnerabilities.

The study will be divided into two parts:

Part I: A qualitative assessment and primer on gas and electric interdependencies, including: review of the 2004 recommendations; assessment of natural gas supply and transportation issues; comparison of electricity generation operation and planning versus gas pipeline operation and planning; electric industry coordination challenges; contribution to vulnerabilities; assessment of existing Regional practices and operational procedures for managing gas pipeline and fuel delivery vulnerabilities; discussion of modeling requirements to simulate severe pipeline failures; and discussion of potential best practices for coordination between the electric and gas pipeline industries.

Part II: A quantitative analysis representing gas pipeline vulnerabilities through contingency simulations, including: determining areas most vulnerable to gas pipeline disruptions; modeling pipeline dynamics to determine leading indicators of catastrophic pipeline disruption and associated timing for industry reaction; detailed analysis of compressor station failures and their contribution to reduction in pipeline throughput; evaluation of historical events and lessons learned; and recommendations for improving gas-fired generation reliability and reducing vulnerabilities associated with the interdependencies of the electric and gas pipeline industries.

NERC is working closely with FERC in their inquiry as FERC has much broader jurisdiction, including portions of the natural gas infrastructure. All information we gather and conclusions we draw from our analysis will be shared with the FERC.

Question 5. Has the NERC undertaken an event analysis before? If so, how long did that analysis last and how did NERC transfer lessons learned and best practices across users, owners and operators of the bulk power system?

Answer. Yes, NERC frequently undertakes event analyses, typically working with the relevant Regional Entity. NERC led two bulk power system event analyses following recent major events. First, NERC was the technical lead for the U.S. and Canadian Task Force that conducted an event analysis of the Northeast Blackout of August 14, 2003. As part of that effort, NERC established a Steering Group of industry experts. Second, NERC led an event analysis of the Eastern Interconnection Frequency Excursion (Rockport Event) of August 4, 2007. Information regarding these two event analyses is provided below.

A. Northeast Blackout of August 14, 2003

1. The initiation and close date
 - a. Start date of August: 15, 2003
 - b. Date of interim report: November 19, 2003
 - c. Date of final report: April 5, 2004
2. The length of time it took to complete the event analysis

- a. Time to preliminary report: 3 months
- b. Time to final report: 7.5 months

3. Method of Communicating Lessons Learned and Best Practices

- a. The NERC Steering Group developed a public report, entitled Technical Analysis of the August 14, 2003, Blackout: What Happened, Why and What Did We Learn?, dated July 13, 2004.
- b. Technical Conferences were held by the Task Force, in which NERC participated.
- c. Recommendations to users, owners and operators of the bulk power system were set forth in the final report. In addition, specific corrective actions for certain entities were included in Appendix D of the final report, entitled NERC Actions to Prevent and Mitigate the Impacts of Future Cascading Blackouts.
- d. The Task Force issued a report one year after the event, entitled One Year Later: Actions Taken in the United States and Canada to Reduce Blackout Risk, August 13, 2004.
- e. NERC issued Final Blackout Recommendations, dated July 14, 2004.
- f. NERC issued a Status Report of the August 14, 2003 Blackout Recommendations, dated July 14, 2005.

B. Eastern Interconnection Frequency Excursion (Rockport Event) of August 4, 2007

- 1. The initiation and close date
 - a. Start date of: August 28, 2007
 - b. Date of final report: December 19, 2008
- 2. The length of time it took to complete the event analysis
 - a. Time to final report: 15.5 months
- 3. Method of Communicating Lessons Learned and Best Practices
 - a. Recommendations to specific users, owners and operators of the bulk power system were set forth in the final non-public report.

NERC and the Regional Entities have worked together on other significant Regional Entity-led event analyses. Two of these recent efforts are identified below.

A. MRO separation event of September 18, 2007 (led by MRO)

- 1. The initiation and close date
 - a. Start date of: October 5, 2007
 - b. Date of interim report: March 26, 2008
 - c. Date of final report: December 11, 2008
- 2. The length of time it took to complete the event analysis
 - a. Time to preliminary report: 5.5 months
 - b. Time to final report: 14 months
- 3. Method of Communicating Lessons Learned and Best Practices
 - a. NERC published a public Advisory entitled, Power Flow and Dynamics Modeling, issued March 10, 2008.
 - b. Recommendations to users, owners and operators of the bulk power system were included in the final report. In addition, specific recommendations for certain entities were included in the final report.

B. South Florida Disturbance of February 26, 2008 (led by FRCC)

- 1. The initiation and close date
 - a. Start date of: March, 2008
 - b. Date of interim report: May 29, 2008
 - c. Date of final report: October 30, 2008
- 2. The length of time it took to complete the event analysis
 - a. Time to preliminary report: 3 months
 - b. Time to final report: 8 Months
- 3. Method of Communicating Lessons Learned and Best Practices
 - a. NERC published three advisories as a result of this event analysis.

1. Relay Maintenance Practices, issued June 26, 2008
2. Unexpected Loss of Generation due to Low Voltage on the System, issued June 26, 2008
3. Turbine Combustor Lean Blowout, issued June 26, 2008
 - b. Recommendations to users, owners and operators of the bulk power system were included in the final report.

RESPONSES OF GERRRY CAULEY TO QUESTIONS FROM SENATOR TOM UDALL

Question 1. Are water utilities usually classified as critical infrastructure and protected from blackouts?

Answer. Water utilities are generally considered higher in the ranking of critical loads for utilities. It is our understanding there may be cases in extreme electricity supply emergencies where circuits that serve water utilities and other critical customers could be interrupted if those customers have their own backup supply systems, such as emergency generators.

Question 2. Are you going to consider classifying natural gas as critical infrastructure to be protected from rolling blackouts, at least during winter?

Answer. NERC is keenly aware of gas-electric interdependencies, and the events of early February in the Southwest underscore the need to address some unresolved issues. Cooperation and assistance from the natural gas industry and its member organizations will be particularly helpful in a review of these interdependencies, given the shift nationwide toward greater reliance on natural gas to produce electricity. In addition, this review will provide a broad look at areas across North America where extreme cold weather or loss of a major gas supply or delivery element could impact electricity production. NERC's event analysis process will include a review of existing procedures designed to mitigate the reliability impacts from such events as well as identify if rotating outages of electric distribution circuits could adversely impact the operation of electric powered gas compressors, gas processing facilities, and other equipment needed to maintain gas quality and throughput on gas delivery systems. We need to understand the unique circumstances of the cold weather event that impacted much of New Mexico and Texas, and determine why lessons from the past were either unable to be applied or were not applied in this event. Were there problems with the electric/gas interfaces? Was this an issue solely about winterization of equipment? Fuel sources do not have to be identified as critical infrastructure in order for NERC to issue lessons learned or to begin a process to identify and disseminate valuable information to users, owners, and operators of the bulk power system to improve its reliable operation.

The recent events in Texas may show the need for utilities to classify some natural gas pumping stations with higher criticality for ranking in load shedding plans. However, we must be mindful that the more loads exempted from load shedding, the more it will hinder the response to protect the reliability of the overall network and burden remaining customers. A higher ranking cannot guarantee a load will not be shed. Classifying more load as highly critical also challenges under-frequency and under-voltage protection schemes which must act swiftly and automatically.

Question 3. This incident shows that the reliability of electricity and natural gas systems is intertwined. Is this a trend in the U.S. energy system?

Answer. Yes, but this is not a new trend. NERC has been examining gas-electricity interdependencies since at least 1994 when NERC and the Interstate Natural Gas Association of America (INGAA) jointly recommended that electric utilities and interstate natural gas pipelines, through NERC and INGAA, review the reliability of electric supply to critical interstate gas pipelines facilities, such as compressor stations. With growing supplies and lower prices resulting from the growth of unconventional gas production in North America, gas-fired generation appears to be the premier choice for new generating capacity in the near to mid-term future. However, increased use of natural gas for generating capacity can increase the bulk power system's exposure to interruptions in gas supply and delivery.

Several drivers are contributing to the growth in gas-fired generation, and as a result, growth in natural gas demand and pipeline infrastructure. Natural gas-fired plants are typically easier to construct, require little lead-time, emit less CO₂, and are generally cheaper to construct when compared to coal and oil-fueled generation facilities. Certain states have placed or plan to place a moratorium on building new coal plants, citing environmental and emissions concerns as justification.¹ These

¹ California's SB 1368 created the first de facto governmental moratorium on new coal plants in the United States. Other states with pending proposals include Arkansas, Georgia, Idaho,

trends are expected to continue over the next several years, further increasing the number of new-build natural gas-fired generating plants in areas with already high dependence on gas for electricity generation.²

The importance of maintaining bulk power system reliability through strong coordination with the gas pipeline industry is magnified as increased system variability materializes. On the supply side, increased variable generation (primarily wind and solar) will require more fast-acting and responsive resources to provide ancillary services. Today, gas-fired generation is largely used to provide ancillary services for supporting the variability in wind generation. Unexpected events, such as pipeline disruptions, unit outages, and extreme weather impacts, must be effectively coordinated between all stakeholders. Increased communication and information sharing will be essential in maintaining the reliability of both systems.

A 2004 report by NERC's Gas/Electricity Interdependency Task Force concluded:

- Gas pipeline reliability can substantially impact electric generation.
- Electric system reliability can have an impact on gas pipeline operations.
- In general, pipeline and electric system operators do not understand each other's business very well.
- Pipeline planning and expansion are substantially different from the electric equivalent.
- Communications between pipeline operators and electric reliability coordinators are generally weak.
- Pipeline tariffs for firm delivery service are not compatible with peaking generation economics in many electricity markets.
- Modern combustion turbines have stringent fuel delivery and fuel quality requirements.

Mitigating strategies, such as storage, firm fuel contracting, alternate pipelines, dual-fuel capability, nearby plants using other fuels, or additional transmission lines from other regions, can help manage this risk.

NERC is currently developing a Special Reliability Assessment on natural gas and electric systems interdependencies. To address these concerns, this reliability assessment will take a broad view for the upcoming 10 years of areas within North America where extreme cold weather or loss of a major regional gas supply could impact electricity production, review existing procedures designed to mitigate the reliability impacts from such events, required coordination between planners and operators in both industries, and provide input into NERC's Reliability Standards, if required. NERC will identify the reliability impacts that natural gas/electricity interdependencies could have across North America.

Additionally, this reliability assessment will review the recommendations from the 2004 NERC study on gas and electric interdependencies, provide a status update on these prior recommendations, determine follow-on actions to fulfill those recommendations, and present guidance to reduce potential vulnerabilities.

Question 4. Do you have full authority for reliability within Texas electricity system and are you able to fully conduct investigations involving Texas?

Answer. NERC has jurisdiction and authority over the bulk power system within the State of Texas, both for the portions of the bulk power system within the Electric Reliability Council of Texas (ERCOT) and for the portions of the State of Texas that are outside ERCOT. NERC does not have jurisdiction or authority over the local distribution portion of the electricity system within the State of Texas. NERC believes it has all the authority it needs to conduct a full inquiry into the events and circumstances surrounding the extreme cold weather that severely affected multiple regional entities and multiple states in early February, including within the State of Texas.

Question 5. As a general matter, if a state or electric grid system that is relatively isolated, like Texas, adds more interconnections to other grids, does that make them more resilient in the event of local power plant failures?

Answer. While additional interconnection capacity adds to the resiliency of any interconnected grid, as a grid becomes larger the relative benefits of such additional interconnection capacity becomes less significant. Further, simply adding additional interconnection capacity at the border of a grid system does not guarantee that all imported electricity can be delivered from that point of interconnection to all areas within the grid due to internal transmission constraints. In general, a small isolated

Maine, New Jersey, Texas, Utah, Washington, and Wisconsin—though some are temporary. Additionally, Ontario and British Columbia have also begun initiatives to not only halt new coal-fired generation, but also reduce coal-fired generation.

²A detailed fuel assessment in the 2009 Long-Term Reliability Assessment: http://www.nerc.com/files/2009_LTRA.pdf

electric grid needs a larger percent installed resource margin (installed resources minus forecast demand as a percent of forecast demand) to achieve the same level of supply adequacy (reliability) as a system that is part of a larger interconnected grid.

RESPONSES OF SHELLEY A. CORMAN TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. It appears that ERCOT issued various Energy Emergency Alerts between 5:00 a.m. and 6:00 a.m. on Wednesday February 2nd. Was Transwestern Pipeline aware of these emergency alerts? If not, when was Transwestern Pipeline aware of the rolling electricity blackouts in the ERCOT service territory?

Answer. Transwestern was not contacted by ERCOT informing Transwestern of these ERCOT Energy Emergency Alerts. Transwestern personnel became aware of rolling electricity blackouts on Wednesday, February 2nd at the same time that the general public was made aware through television reports.

Once aware of the publicly announced rolling electricity outages in Texas, Transwestern checked with the building manager about any potential outages affecting its Houston office, which includes its gas control center. The building manager told Transwestern that no power outages to the Houston office building were expected. Transwestern also verified that its back-up generator was available to maintain power to its gas control center and made preparations for conducting its gas control operations from Transwestern's back-up gas control site if necessary. In fact, Transwestern's Houston office building did not experience any power outages, and Transwestern did not have to utilize its back-up generator or relocate gas control operations.

Transwestern did not experience any power outages at its compressor stations which impeded its ability to receive or deliver gas to shippers in New Mexico. Transwestern did experience some power outages to certain auxiliary field facilities (i.e., field office building power and telecommunications equipment). One of these field locations (Kermit, TX) is located within ERCOT. Transwestern has back-up generators for many of these locations. Auxiliary power issues did not impede Transwestern's ability to receive or deliver gas to shippers in New Mexico.

Question 2. Did Transwestern Pipeline Company communicate with ERCOT, natural gas processing plants and/or suppliers of natural gas in anticipation of the severe weather conditions of early February? Are there any regulatory requirements or industry practices requiring communications with your customers?

Answer. Transwestern does not communicate directly with ERCOT. Transwestern communicates directly with its utility providers for electricity supplied to its field office buildings and electric compressor units. If power to any of these facilities is disrupted, the utility provider would communicate with Transwestern's local field office.

Transwestern communicates with the gas processing and supplier facilities that are directly connected to its pipeline. Several times a day these parties verify the expected quantities of gas supply that they will put into Transwestern's pipeline. To the extent actual gas supply flows differ from the planned quantities, Transwestern gas control contacts the gas processing or supply facility operators to discuss these differences and determine the appropriate plan of action.

Transwestern provides notices to its shippers on its Internet website. Transwestern's FERC gas tariff describes the timing and types of communication notices to be made to operators and shippers in the event of adverse operating conditions.

Question 3. Has Transwestern Pipeline Company had discussions with electric utilities that serve its facilities regarding the inclusion of its assets in their blackout operations plans?

Answer. Not directly. Transwestern is generally aware of public comments from ERCOT and FERC about the need to address the priority of gas facilities in electric curtailment plans. Transwestern is also generally aware that this matter has been discussed in proceedings at the Public Utility Commission of Texas.

Question 4. According to a Transwestern Critical Notice (posted on February 2nd), it appears that low gas volumes on the Transwestern Pipeline system were due, in part, to less gas than scheduled being injected at a receipt point. Do you know why these supplies were not received? What processes do you follow for maintaining delivery service during these events?

Answer. Transwestern does not have independent knowledge of why less gas than scheduled was being input. Transwestern gas controllers received comments from third-party operators about power outages, freeze offs, and difficulties starting and keeping equipment running.

Transwestern's FERC gas tariff describes the steps that it is permitted to take during low line pack conditions, including the right to issue underperformance notices, reduce scheduled quantities when supplies are not being received, and issue Alert Day notices advising operators to adhere to scheduled quantities.

Before and during this winter weather event, Transwestern operated compression to move gas to the areas of greatest demand and maintain pressures as high as possible given the amount of natural gas in the pipeline. Transwestern continued to support deliveries by using its line pack (its own gas in the pipeline) to make up for gas not being received into the pipeline.

Question 5. Even if New Mexico Gas Company had Found suppliers to inject natural gas at a delivery point, would New Mexico Gas Company have been able to withdraw gas on February 3rd, given the lower line pack in your system?

Answer. Transwestern did not prevent New Mexico Gas Company from withdrawing gas from the pipeline on February 3 or at any time during the winter weather. Although mainline pressures on February 3 were lower than prior days, the pressures at all time remained above contractual minimum pressures. If suppliers had been able to physically put more supply into Transwestern's pipeline, then pressures would likely have remained higher.

Question 6. Has Transwestern identified steps and measures it can implement immediately, on its own, that would mitigate the severity of these kinds of events?

Answer. Transwestern cannot control the underperformance of supplies into its system. Transwestern used the tools within its control to maximize the gas available for delivery to New Mexico delivery points during the recent winter weather, while not adversely affecting service to the other portions of its system. Before and during the February extreme winter weather, Transwestern operated compression to maximize pressures in New Mexico given the quantities of gas in its system. Transwestern also used its line pack gas to offset to the extent possible customer supplies that were not being received into Transwestern. Transwestern also took steps pursuant to its FERC gas tariff to address the situation, including posting operational alert notices.

Additionally, Transwestern plans to meet with interconnected parties, including New Mexico Gas Company, to review operating pressures and determine whether any facility modifications are warranted.

RESPONSES OF SHELLEY A. CORMAN TO QUESTIONS FROM SENATOR TOM UDALL

Question 1. It is my understanding that the gas processing plants that went down in the Texas blackouts feeds gas into your systems. Do you have an idea of how many gas processing plants were lost?

Answer. Transwestern does not know how many processing plants were impacted by freeze offs, power outages or production outages. Transwestern is aware which supply facilities connected to Transwestern were underperforming and posted many notices of underperforming receipts, including processing plants. A review of operating data indicates that 7 directly connected gas processing plants gave Transwestern less gas than scheduled on either February 2, 3 or both days. These plants are located in both New Mexico and Texas.

Question 2. Would it help you to provide gas to your customers if critical natural gas infrastructure was not subject to rolling blackouts? Is that a good policy?

Answer. Yes, it would be a helpful policy if natural gas infrastructure (including processing plants, gas compression facilities, and gas control centers) was not subject to rolling blackouts. Transwestern welcomes the opportunity to work with this Senate Committee to ensure natural gas infrastructure is recognized as a priority in any future policy discussions.

Question 3. Your testimony states that both of your systems did not experience any major failures. Are you subject to federal regulation on this issue?

Answer. Transwestern is an interstate natural gas pipeline operating pursuant to a certificate of public convenience and necessity issued by the FERC and under a FERC gas tariff containing the terms and conditions of service for its shippers. The operation of Transwestern's system is also subject the federal Natural Gas Act and related rules, regulations and policies of the FERC.

Transwestern did not experience any power outages at its compressor stations which impeded its ability to receive or deliver gas to shippers in New Mexico. Transwestern did experience power outages to certain auxiliary field facilities (i.e., field office building power and telecommunications equipment). However, in many cases Transwestern has back-up generators and these auxiliary power outages did not impede Transwestern's ability to receive or deliver gas to shippers in New Mexico.

Question 4. Did you seek reductions from large, non-residential utility customers to help conserve gas during the crisis? What was the response?

Answer. As noted above, Transwestern is an interstate natural gas pipeline that provides transportation-only service to its customers, Transwestern does not own the gas that its shippers purchase and put into the pipeline for transportation. Accordingly, Transwestern does not have a supply curtailment plan in its FERC gas tariff.

In the event of supply shortfalls, Transwestern's FERC gas tariff allows it to issue underperformance notices and reduce scheduled quantities related to the underperformance. Its tariff also provides that Transwestern can issue an Alert Day notice advising shippers to adhere to scheduled quantities. Transwestern took both of these steps during the early February winter weather.

Question 5. Did gas processing plants or gas suppliers notify you when their assets failed and stopped sending your customers gas into your system?

Answer. In some cases, interconnected processing plants and suppliers notified Transwestern of reduced supplies and facility outages. In other cases, Transwestern gas control personnel contacted the gas processing plant operators and other supply facility operators when quantities were not being received as scheduled.

Question 6. NM Gas Company is seeking industry contributions to the compensation fund. Have you been approached and what has been your response?

Answer. Yes, Transwestern has been approached by New Mexico Gas Company regarding a contribution to its compensation fund.

Transwestern and its parent company, Energy Transfer Partners, participate in a number of community outreach programs. When the Company receives a request to provide funding, the Company's internal review board reviews the request and the possible level of prospective funding from the Company. The Company's review board is currently evaluating the request from New Mexico Gas Company.

Although the Company is undergoing its evaluation of New Mexico Gas Company's contribution request, Transwestern believes that it has already undertaken important actions in support of its customers in New Mexico. Before and during the February extreme winter weather, Transwestern operated compression to maximize pressures in New Mexico given the quantities of gas in its system. Transwestern also used its line pack system gas to offset to the extent possible customer supplies that were not being received into Transwestern. Transwestern also took steps pursuant to its FERC Gas tariff to address the situation, including posting operational alert notices. Transwestern used the tools within its control to maximize the gas available for delivery to New Mexico delivery points during the recent winter weather, while not adversely affecting service to the other portions of its system. Transwestern is proud of the manner in which it managed its system during this time and the efforts of its dedicated employees during this extreme weather event.

RESPONSES OF GEORGE A. SCHREIBER, JR., TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. Does the New Mexico Gas Company follow specific operating procedures in the anticipation of extraordinary operating conditions? Do these procedures require it to communicate with suppliers, gas pipeline companies, agencies or people?

Answer. Yes, New Mexico Gas Company ("NMGC" or the "Company") has numerous policies and procedures in its Gas Operations Manual (GOM) for extraordinary operating conditions, including communications with suppliers, gas pipeline companies, agencies and or other people during such conditions. As indicated by the plan names, these documents address various aspects of dealing with extraordinary operating conditions.

Specifically, the Company has a Company-wide Operations and Maintenance (O&M) Plan (GN-009) and separate O&M Plans for each operating location throughout the state for operations and communications during extraordinary operating conditions. The Company has Engineering/Design Policies during Emergencies, Interruptions, Curtailments (ED-012) and Engineering/Design Procedures for Emergency Plan Maintenance (ED-P05). The Company has Emergency Plan Policies as follows: General (EP-000); Pre-Emergency Plans (EP-001); Reviewing and Updating Emergency Plans (EP-002); Telephone Numbers (EP-003); Media/Communications (EP-004); Plan of Action for Emergencies—Summary (EP-005); Plan of Action for Gas Outage (EP-009); Plan of Action for Abnormal Operating Conditions and Transmission Systems (EP-010); Plan of Action for a Potential Incident(EP-011); Plan of Action for Disasters (EP-013), with Exhibits and Training Information(EP-014 through 016); an Isolation Plan (EP-018); and a procedure for Meter Turn On, Turn Off, Set, Change or Outage (SI-P05).

Additionally, for interruptions, curtailments and capacity allocations, as occurred during the week of January 31, 2011, NMGC operates pursuant to Original Rule No. 21, which was approved by the New Mexico Public Regulation Commission ("Commission"). A copy of Rule 21 is attached as *Exhibit 1. Rule 21 has provisions for notifying on-system transportation end-users prior to any interruption or curtailment of service under circumstances that do not constitute a system emergency. An on-system transportation end user is physically located on the NMGC system, but these end-users purchase their gas from a shipper, marketer or other third party, i.e. they do not purchase their gas from NMGC.

Different provisions of Rule 21 govern a system emergency. During a system emergency, NMGC is required to notify each transportation shipper of the system emergency as quickly as possible, but Rule 21 does not require notification in advance of the system emergency curtailment. NMGC complied with the provisions of Rule 21 during the week of January 31, 2011. NMGC's general operating procedures provide for emergency notifications to key stakeholders. NMGC followed its emergency communications procedures during the week of January 31, 2011.

Section 17.10.650.14G(3) of the New Mexico Administrative Code ("NMAC") requires that the Company notify the Commission by telephone of, and confirm by letter, any interruption to the service of a major portion of any single distribution system. This requirement was met with on February 3, 2011, when the telephonic notification was made, and on February 16, 2011, when a confirmation letter was filed.

17.10.660.10E(6) NMAC requires that the Company provide to the Commission within 60 days of the end of an interruption, curtailment or system emergency actual volumes and time periods of the event for each transportation customer and the reasons for the interruption, curtailment, or system emergency. NMGC will file this report with the Commission on or before April 2, 2011.

Question 2. Please detail the extent of your communications with El Paso Natural Gas Pipeline, TransWestern Pipeline and the Electric Reliability Council of Texas (ERGOT) between January 31st and February 3rd.

Answer. The communications are detailed in Exhibit 2, which is attached to this response.

Question 3. Given that the New Mexico Gas Company provides natural gas services to Department of Defense facilities, are there formal communications protocols with those facilities in anticipation of extraordinary operating conditions?

Answer. Yes. These installations are treated in the same way as all other customers under the Rule 21 procedures.

Additionally, on February 4, 2010 (1 year prior to the recent outage), NMGC meet with Utility Managers and Contracting Officers at Kirtland AFB and Sandia labs to discuss the risk of service interruptions during extraordinary operating conditions. In particular, this group discussion was focused on the risk of curtailment and possible utilization of propane-air backup systems to supplement short-term gas demands. This meeting and subsequent discussions were requested by KAFB and Sandia shortly after the decommissioning of their physical plant, which was capable of operating on alternate fuels. An expert on propane-air backup systems who has extensive experience with DOD facilities accompanied NMGC to the meeting. Based on the group discussion and analysis of redundant gas supplies available to the base and surrounding areas, the risk of interruption was characterized as relatively low. The final decision to invest in propane air back-up systems, however, was left with KAFB personnel and Sandia Energy Managers.

Question 4. Did the New Mexico Gas Company cut off gas service to customers based on a formal or established service curtailment plan? If yes, how and when was that plan created? Was it reviewed and/or approved by the New Mexico Public Regulation Commission? If no, how did New Mexico Gas Company decide which communities to shut off over others?

Answer. As identified above, for interruptions, curtailments and capacity allocations, NMGC operates pursuant to Original Rule No. 21. Rule 21 was initially adopted by the Commission when the gas utility assets were owned by NMGC's predecessor, Public Service Company of New Mexico. In January 2009, when NMGC acquired the gas utility assets, Rule 21 was adopted and approved by the Commission for use by NMGC.

On February 2, 2011, pursuant to the provisions of Section VI of Rule 21, NMGC contacted its large industrial and commercial customers for voluntary curtailments of gas usage or to switch to alternate fuels. NMGC also asked residential customers to voluntarily conserve gas. On February 3, 2011, when system emergencies were declared first on the south segment of the NMGC system and then on the north segment of the NMGC system, consistent with Section V of Rule 21, communities were

*All exhibits have been retained in committee files.

curtailed “to ensure, to maintain the ability of the system to deliver natural gas to maintain the integrity of as many segments of the system as possible”. Because time was of the essence, the system segments and communities curtailed were those where the curtailment of gas service could occur quickly or those that were already experiencing pressure loss. In the south, this included portions of Alamogordo and all of Tularosa and La Luz. In the north, this included the towns of Bernalillo and Placitas and portions of Santa Ana Pueblo, Española and surrounding communities, including all of Santa Clara Pueblo, Ohkay Owingeh Pueblo, and portions of San Ildefonso Pueblo, and Taos and surrounding communities, including Taos Pueblo, Questa, and Red River.

Question 5. Did the New Mexico Gas Company sell any gas to entities other than customers during the week of the outage or the week prior?

Answer. NMGC did not enter into any off-system sales between January 31 and February 4, 2011—the week of the outage.

As described below, NMGC entered into a baseload sale in December for each day in January, and there were two additional periods of incremental off-system sales in January, including during the week and weekend prior to the outage. In general, as described below, NMGC enters into gas sales when it has gas supply on its system in excess of demand and needs sales to balance system and storage levels. These baseload and incremental sales in January were consistent with this practice and did not contribute to the outages which occurred on February 3, 2011.

Baseload Sale in December 2010 for January 2011—On December 22, 2010, NMGC entered into a baseload sales contract providing for a baseload sale of 15,000MMBtu of gas for each day starting January 1st and ending January 31st. A sale of this nature is typically made based on long-term weather projections in order to maintain consistent storage inventories. This particular baseload sales contract was entered into in December for January based on unseasonably warm temperatures experienced in November and December, which had resulted in reduced NMGC storage flexibility, and on projections for a warm January. On December 22, 2010, NMGC’s storage inventory stood at 1,918,858MMBtu, and NMGC was averaging an injection of 10,000MMBtu per day of excess system supply gas. As of December 22, if this trend continued at the same rate (10,000 units per day), NMGC only had 28 days of injection remaining before reaching its storage capacity. Because long-term weather forecasts were predicting January weather to be similar to December and November weather and January baseload volumes were expected to increase by 6,000MMBtu per day statewide in comparison to December baseload volumes, a decision was made to enter into a baseload sales contract for 15,000MMBtu per day throughout January 2011.

Incremental Sales in January 2011—In addition to the baseload sale described above, twice in January 2011, NMGC entered into additional incremental sales: the first occurred between January 18 and 21; and the second occurred between January 27 and 31. Each was the result of excess storage injections resulting from warm weather periods.

During the four-day period from January 15 to January 18, because of warm weather, NMGC had experienced reduced demand and had injected a total of 163,597MMBtu of excess supply into its storage facility near Andrews, Texas. As a result, on January 18, 2011, NMGC contracted to sell 6,500MMBtu for January 18th, 35,000MMBtu for January 19th, 25,000MMBtu for January 20th, and 25,000MMBtu for January 21st. These sales were entered into in an effort to maintain proper system and storage levels.

On January 27, 2011, coming off another period of warm weather, NMGC entered into a contract to sell 5,000MMBtu excess system supply for January 28th. On January 28th, for the same reasons, NMGC contracted to sell 10,000MMBtu for January 29th, 10,000MMBtu for January 30th, and 10,000MMBtu for January 31st. Typically, weekend contracts such as the one on the 28th are entered into on Friday for the entire weekend, or the weekend plus Monday, and again are common in the industry to maintain proper system and storage levels. The weather profile for the week ending January 28, 2011, and the projections for the weekend of the 29th through 31st were similar to the weather pattern for the weekend of January 15th through the 18th. As before, the sales during the period from January 27th through the 31st were an effort to maintain system and storage levels following a warm period and were made to protect against a large injection into the storage facility.

RESPONSES OF GEORGE A. SCHREIBER, JR., TO QUESTIONS FROM
SENATOR TOM UDALL

Question 1. What is the status of your compensation efforts—how many claims have been filed, for how much, and what types of decisions are you making?

Answer. As of March 14, 2011, 1540 claims for assistance have been filed. As for the amount claimed, many claims do not list a specific amount, so it is difficult to say what the total dollar amount of claims is or will be. NMGC has six teams working on contacting the claimants to discuss their claims. The Company is committed to handling these claims promptly and fairly, on an individualized basis. The claims vary widely. A key goal of the relief fund is to provide help and financial assistance to those who most need it. In evaluating the claims, the team members are attuned to the particular circumstances of the customers, particularly if there are situations where the gas supply shortage and resulting outage has resulted in hardships. Checks and balances are in place to ensure consistency and fairness in the treatment of all claims.

Question 2. Were you aware of the Texas blackouts on Wednesday, February 2, and their possible impacts on your gas supply?

Answer. NMGC first learned of some rolling blackouts in Texas early on the morning of Wednesday, February 2, 2011. At that time, Company personnel were informed by Transwestern gas control that the NMGC contract storage facility near Andrews, Texas, was not delivering storage gas to Transwestern. Transwestern control room personnel indicated that they had been told that the storage facility had been knocked off line by rolling blackouts. NMGC called the Operations Supervisor of the storage facility, and it was confirmed that the storage facility had been knocked off line by rolling blackouts. They were off line for a few hours returning to service by mid-morning on February 2nd.

At 10:20 am on the February 2nd, El Paso Natural Gas issued a Critical Operating Condition notice. This notice stated that "EPNG has been informed that rolling blackouts in the West Texas area are impacting performance out of the Permian Supply basin." The document makes no reference to the existence or effect of rolling blackouts throughout the remainder of Texas.

NMGC was otherwise not aware of the severe impact of the rolling blackouts on the remainder of supply into the interstate pipelines until sometime around 6 am on Thursday February 3, 2011, when the Company again heard that blackouts were causing disruption in the natural gas infrastructure.

Question 3. Did you consider mandatory cutoffs of large industrial users on Wednesday to prevent the need for residential cutoffs on Thursday?

Answer. Yes, all options were considered at the time. On Wednesday, February 2, 2011, NMGC elected to proceed with voluntary curtailments and at 12:24 pm issued a press release statewide asking all customers to voluntarily conserve gas. During Wednesday, most of the large industrial and commercial customers contacted by the Company voluntarily switched to alternative fuels or curtailed their loads significantly. Mandatory curtailment of large industrial and commercial customers on February 2, 2011, however, would not have avoided the curtailment of residential customers, because industrial and commercial customers are only a small percentage of our overall customer demand.

Question 4. Your testimony stated that you are considering moving to a system that does not rely on interstate pipelines and would be more self-sufficient in New Mexico. Could you describe that in more detail?

Answer. NMGC is evaluating physical system changes, including the feasibility of establishing back-up supply measures such as LNG, propane air systems, CNG and underground storage. This evaluation also includes looking at the feasibility of installing new pipeline(s) feeds or looping existing lines so that the ends of the system are less susceptible to pressure loss given a supply shortage scenario as the Company faced in this event. NMGC has retained outside consultants to assist in evaluating the different options. That said, the Company does not believe that severing relationships with the interstate pipelines altogether is a viable or likely option, because, among other things, of the diversity of resources those out-of-state options offer.

RESPONSES OF JANICE PARKER TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. It appears that ERCOT issued various Energy Emergency Alerts between 5:00 am and 6:00 am on Wednesday February 2nd. Was El Paso Western Pipeline aware of these emergency alerts? If not, when was El Paso Western Pipeline aware of the rolling electricity blackouts in the ERCOT service territory?

Answer. El Paso Natural Gas Company (EPNG) was not aware of the Energy Emergency Alerts issued by ERCOT on Wednesday February 2, 2011. On February 2, 2011, between 5:00—6:00 a.m. Mountain Time (MT), EPNG first became aware of power outages when EPNG contacted some of the third-party processing plant operators who were not delivering their scheduled quantities of gas to the EPNG sys-

tem. At that time, EPNG was informed by the plant operators that their operations had been affected by a loss of power. Between 8:00—9:00 a.m. MT, EPNG was first informed by some plant operators, and later able to confirm, that rolling blackouts were occurring in Texas. Shortly thereafter, EPNG also became aware of power plant outages reported by El Paso Electric (a third-party electric utility in El Paso, Texas not related to our company) due to the cold weather.

Question 2. Did El Paso Western Pipeline communicate with ERCOT, natural gas processing plants and/or suppliers of natural gas in anticipation of the severe weather conditions of early February? Are there any regulatory requirements or industry practices requiring communications with your customers?

Answer. EPNG is not aware of any communications to or from ERCOT during the weather event in question. Our understanding from ERCOT is that while ERCOT manages the bulk transmission grid and may order load sheds or rolling blackouts under emergency conditions, each local electric distribution provider has an emergency response plan that determines which of its customers will be affected by rolling blackouts. We are investigating what public sources of information we can subscribe to for advanced warning of any electric grid issues in our area.

With respect to communication with processing plants and gas suppliers, EPNG electronically sends information seven times per day to each third-party facility connected to its system and supplier to show the quantity of gas that each customer has requested for delivery into EPNG's pipeline for the current or following day. The third-party plant and/or gas supplier will then confirm whether it agrees to provide that quantity of natural gas at the location indicated. EPNG then electronically sends the final scheduled quantity to each customer, the customer's suppliers, and interconnected third-party facility operators. This is also done seven times per day. The expectation is that the customers and their suppliers will ensure the gas is received by EPNG at the agreed-upon time. If the processing plant or other third-party facility operator continues to confirm more gas supply than EPNG has received, or has an expectation to receive based on current flow, EPNG then reflects such underperformance at that supply location in what is scheduled for the customers and communicates such underperformance to the affected customers and interconnecting facility operators.

Question 3. Has El Paso Western Pipeline had discussions with electric utilities that serve its facilities regarding the inclusion of its assets in their blackout operations plans?

Answer. EPNG has recently started discussions with the electric utilities that supply power to its facilities regarding the inclusion of EPNG's compressor facilities on the utilities' critical infrastructure lists. Until the cold weather events of February 2011, EPNG was not aware of the existence of such lists. Nor was the possibility of being added to such lists ever brought to EPNG's attention by its electric utility providers.

Question 4. It appears that El Paso Natural Gas declared Strained Operating Conditions on February 2nd. A declaration notice indicated the San Juan supply basin was experiencing underperformance issues related to the cold weather. Does El Paso Natural Gas have processes for communicating with suppliers of natural gas under these circumstances? Does El Paso Natural Gas have processes for communicating with customers under these circumstances? What are your processes for preserving and maintaining service under Strained Operating Conditions?

Answer. EPNG uses multiple methods of communication to interact with its customers and other interested parties. EPNG posts information on its electronic bulletin board (EBB), as required by the Federal Energy Regulatory Commission, where the information is available publicly. All notices are also emailed immediately to all subscribers to the EBB, which includes customers, suppliers, plant operators, producers, other pipelines, regulators, industry information providers, and any other interested person. EPNG also contacts third-party facility operators connected to its pipeline system when it observes any significant underperformance at supply locations to determine if the supply shortfall or facility outage is short-term or long-term. If it is uncertain when the supply underperformance will be corrected, EPNG then posts a notice of underperforming supply locations on its EBB. This is a quick signal to affected customers that they should arrange for supply from other locations capable of tendering sufficient supplies of natural gas into EPNG's pipeline system to support their demand.

With respect to maintaining service under Strained Operating Conditions, EPNG will first utilize its Washington Ranch Storage facility near Carlsbad, New Mexico, to withdraw gas from the underground storage caverns to support deliveries on the system until the customers and their suppliers can perform. EPNG will also use available gas already in the pipeline system (commonly known as "linepack") to try to backstop its customers experiencing supply shortfalls and to help make deliveries.

Linepack has to be replenished, however, generally within 12-24 hours because it is necessary to ensure operational stability and manage pipeline operating pressures. Finally, there are a limited number of delivery points on which EPNG has the ability to use flow control, either remotely or manually, to limit the quantity of natural gas being taken by customers. EPNG does set flow control at deliveries to other interstate pipelines on a daily basis, but prior to using flow control on deliveries to customers, e.g., a gas utility, electric utility or industrial customer, EPNG typically would call and solicit voluntary reductions by that customer. From the standpoints of safety, facility and consumer protection, it is best for EPNG's customers to decide voluntarily how and where to limit their takes of gas from the system to match the quantity of supply they have been able to secure.

Question 5. On February 2, EPNG issued operational notices to customers at 7:24 a.m. Mountain Time (MT), 9:31 a.m. MT, 10:07 a.m. MT, 10:20 a.m. MT, and then at 11:51 a.m. The Notices laid out the severity of the situation, provided actions that customers should take, and potential consequences if customers continued to take more gas from EPNG's system than was delivered on their behalf. What were recommended actions for customers? What are the potential consequences if customers took more gas off the system than was delivered on their behalf?

Answer. Copies of these notices are attached for your reference as Attachment 1.* Recommended actions included asking customers to balance receipts and deliveries (i.e., taking from EPNG only the quantities of gas actually tendered to EPNG on the customer's behalf). EPNG suspended making loans of gas from its system or providing interruptible storage service in order to support higher priority service needs. EPNG also asked customers who could provide assistance to the system to contact EPNG's Gas Control Department. Potential consequences for taking more gas from the EPNG system than the customers had tendered include financial penalties or having EPNG use flow control. As was seen during February 2-4, 2011, customers taking significantly more gas out of the EPNG pipeline system than was supported by the supplies being put into the pipeline by the customers' suppliers caused pipeline operating pressures to drop and impact some customers' operations.

Question 6. Even if New Mexico Gas Company had found suppliers to inject natural gas at a delivery point, would New Mexico Gas Company have been able to withdraw gas on February 311, given the lower line pack in your system?

Answer. EPNG was able to deliver all of the natural gas supplies received on behalf of its customers plus additional gas sourced from EPNG's Washington Ranch storage facility and linepack. EPNG believes that it could have delivered additional gas supplies acquired by its customers. However, due to the integrated nature of EPNG's pipeline system and the extent of supply shortages, it is difficult to know whether additional supplies acquired by New Mexico Gas Company alone would have been sufficient to increase the pipeline operating pressure on EPNG's south system to the level needed by New Mexico Gas Company to make all deliveries in the Alamogordo area of its system.

Question 7. El Paso Natural Gas began to see recovery on February 3 when customers were able to locate some additional supply at pipeline interconnects. Where were these pipeline interconnects? Does El Paso Natural Gas know why the additional supply was available?

Answer. The pipeline interconnects at which EPNG began to experience meaningful increases in receipts late on February 3 and February 4 were located in the San Juan Basin in New Mexico, at the western end of EPNG's system near California, and in the Permian Basin of Texas. Since EPNG is a transporter (and not a supplier) of natural gas, it does not know the exact reasons for the ability to increase supplies on February 3-4, but it can state that many of the pipeline interconnects at which it experienced increased receipts of gas into its system have access to Rockies natural gas supplies or pipeline-operated storage.

Question 8. Has El Paso Natural Gas identified steps and measures it can implement immediately on its own that would mitigate the severity of these kinds of events?

Answer. EPNG is committed to working with its customers and their suppliers to implement a tabletop mock emergency, using the early February supply outages and heavy demand as the mock scenario, to share lessons learned and determine if there are alternative steps that could or should be taken by EPNG or the other parties to better withstand a significant loss of supply, regardless of the reasons.

EPNG is also committed to reviewing its winter preparedness plans for its assets and people to implement any identified improvements, including working with its electric service providers to have critical compressor stations added to their list of critical infrastructure. EPNG will meet with all affected customers to do a thorough

* All attachments have been retained in committee files.

facility-by-facility performance review and determine if there are any future enhancements that would have mitigated the effect of the lower pipeline pressures caused by the supply shortages. EPNG will also participate in and, as appropriate, take a leadership role in any industry initiatives to address a similar situation in the future, including improving the electric and gas grid coordination.

Finally, EPNG is prepared to re-initiate proposed storage development projects in Arizona and/or New Mexico if customers are interested in pursuing additional natural gas storage directly connected to the EPNG system. It is important to note that since EPNG does not have responsibility for or control over the gas supply function, it is not possible for EPNG to overcome the magnitude of shortages that were experienced the first week of February with its current tools of linepack and Washington Ranch storage. Therefore, customers may want to assess the feasibility of adding storage to the EPNG system in which they can store their gas supplies for withdrawal on demand.

RESPONSES OF JANICE PARKER TO QUESTIONS FROM SENATOR TOM UDALL

Question 1. It is my understanding that the gas processing plants that went down in the Texas blackouts feeds gas into your systems. Do you have an idea of how many gas processing plants were lost?

Answer. EPNG does not know which processing plants had operating problems due to rolling blackouts or due to other cold weather issues. Attachment 2 is a list of the locations where EPNG issued notices of supply underperformance for February 2-4, 2011, including the operator and the type of facility.

Question 2. Would it help you to provide gas to your customers if critical natural gas infrastructure was not subject to rolling blackouts? Is that a good policy?

Answer. EPNG believes it is a good policy for critical natural gas infrastructure not to be subject to rolling blackouts especially in the winter season. This would be the case whether it is EPNG's pipeline compression equipment or third-party facilities that support natural gas production or processing.

Question 3. Your testimony states that both of your systems did not experience any major failures. Are you subject to federal regulation on this issue?

Answer. EPNG is subject to the comprehensive jurisdiction of the Federal Energy Regulatory Commission (FERC) for the sale of its pipeline capacity, its transportation services, and its rates. If EPNG had a pipeline or equipment failure that affected its contracted firm transportation capacity, the tariff EPNG has on file with and approved by the FERC governs the manner in which it would prorate the use of the remaining available firm pipeline capacity. As stated in my testimony, EPNG had sufficient pipeline capacity to transport the customers' gas supplies plus make additional deliveries from its Washington Ranch storage field and linepack. The U.S. Department of Transportation also intensively regulates the safety of EPNG's operations.

Question 4. Did you seek reductions from large, non-residential utility customers to help conserve gas during the crisis? What was the response?

Answer. Large, non-residential utility customers are customers of New Mexico Gas Company and they would best be able to answer this question. As noted above, with respect to EPNG's customers, EPNG did solicit assistance from its customers through its EBB notices and received one offer of assistance for February 2, 2011, but this assistance did not occur as anticipated by the customer due to the significant shortfall of supplies on that day. Also, EPNG called other interconnecting pipelines to see if they could assist, and did receive modest amounts of assistance from those operators. Unfortunately, the widespread nature of the cold weather limited the ability of other parties to assist.

Question 5. Did gas processing plants or gas suppliers notify you when their assets failed and stopped sending your customers gas into your system?

Answer. No. EPNG's Gas Control Department had to call the operators with which it had interconnecting facilities to determine why it was receiving less gas than was confirmed by those parties for delivery into the EPNG system. This is an area of communication where EPNG would like to see improvements. EPNG will work with its customers and their suppliers to determine what they can do to improve proactive communication back to the pipeline.

Question 6. NM Gas Company is seeking industry contributions to the compensation fund. Have you been approached and what has been your response?

Answer. New Mexico Gas Company has requested that EPNG consider a contribution. EPNG has over 70 years of service history in New Mexico, and we know that some citizens in the State may have a need during these difficult economic times. One of EPNG's company values is to be a good neighbor where we do business. We

will certainly consider helping in a manner similar to what we have done in other situations where a community need exists.

RESPONSES OF JOHN DUMAS TO QUESTIONS FROM SENATOR BINGAMAN

Question 1. How are the electric generating units located within the ERCOT service territory protected against the effects of sustained severe cold conditions?

Answer. ERCOT market rules call on operators of electric generating units to “establish and maintain internal procedures for monitoring actual and forecasted weather and for implementing appropriate measures when the potential for adverse weather or other conditions (which could threaten ERCOT System reliability) arise.” See ERCOT Protocols § 6.5.9.3.1(5)

The details surrounding the weatherization requirements of electric generating units can be found in the Public Utility Commission of Texas’ (PUCT) substantive rules. Specific sections of interest are identified below:

- Section 25.53, Electric Service Emergency Operations Plans, requires power generation companies to file with the PUCT copies of its emergency operations plans, and any revisions to those plans no later than 30 days after such changes take effect. As part of these emergency operations plan submissions, power generation companies must include a summary of power plant weatherization plans and procedures (§ 25.53(c)(2)(A)).
- Section 25.94, Report on Infrastructure Improvement and Maintenance, requires annual reports to be submitted by all electric utilities to the PUCT. Areas that are susceptible to damage during severe weather are required to be identified in this report (§ 25.94(c)(1)).
- Section 25.95, Electric Utility Infrastructure Hardening, requires annual report to be submitted by all electric utilities to the PUCT. As part of this filing, any actions before, during, or after extreme weather events are required to be identified.

Question 2. ERCOT issued instructions for firm load curtailment to address outages across of approximately 82 generating units. Was ERCOT aware of the location of natural gas facilities (e.g. production, processing, and transmission) within its operating territory when it issued those instructions? What are the roles of the member transmission owners during such firm load curtailments? Are natural gas facilities (e.g. production, processing, and transmission) in the ERCOT territory assigned any particular priority in the firm load curtailment process?

Answer. ERCOT’s interface as grid operator is with electric transmission and generation providers. The instructions ERCOT issues regarding firm load curtailment are issued to transmission operators, and the transmission operators determine the locations subject to load curtailment. ERCOT communicates with Qualified Scheduling Entities (QSEs) and Resource Entities who represent, among others, owners of natural gas-fired electric generating units. QSEs are required to reflect any anticipated de-rating of capability due to fuel in their current operating plans (COP), which are hourly capacity schedules submitted to ERCOT. ERCOT does not currently have visibility into the location of natural gas production, processing, and transmission facilities.

The roles of the member transmission owners during firm load curtailments are outlined in Section 4.5 Energy Emergency Alert (EEA) of the ERCOT Operating Guides. When ERCOT directs firm load shedding, the member transmission owners reduce their load by their load ratio share, as documented in Section 4.5.3.4 Load Shed Obligation of the ERCOT Operating Guides. ERCOT’s instructions to shed a specific number of megawatts are executed by the transmission owners based on previously determined shares among the region’s transmission owners, so there is no doubt that sufficient load is curtailed to meet system demands. The location of the specific load that is curtailed is determined by the transmission owners, based on their individual plans, which are informed by regulatory requirements regarding service to critical loads.

ERCOT does not assign priority of load to be shed as part of the firm load curtailment process, but simply the quantity of load to be curtailed. It is up to transmission owners operating in the ERCOT region to designate priority and to carry out the curtailment of load as appropriate. Section 25.497 of the PUCT substantive rules define guidelines for the transmission owners to follow when giving priorities to customers during load shedding events. The rule defines “Critical Load Public Safety Customers” as customers for whom electric service is considered crucial for the protection or maintenance of public safety, including but not limited to hospitals, police stations, fire stations, and critical water and wastewater facilities.

Within those guidelines, transmission owners determine the priorities of loads shed during a firm load curtailment directed by ERCOT. The requirements do not currently assign a “critical load” priority to natural gas facilities.

Question 3. Under what circumstances does ERCOT communicate with pipeline operators, natural gas processors and/or natural gas producers in its service territory?

Answer. ERCOT has no authority to direct entities in the natural gas industry to take particular actions in emergency situations. Intrastate natural gas regulation in the ERCOT region is managed by the Texas Railroad Commission. ERCOT operators understand, based on past experience, how weather may affect natural gas availability in certain parts of Texas. There is no systematic method in place, however, for ERCOT to take actions based on the location of natural gas facilities. As part of its response to the February 2011 weather events, ERCOT is taking steps to coordinate with natural gas regulators and industry participants to address natural gas impacts of electric load curtailment.

Question 4. ERCOT system set a new record for peak winter power demand on February 10th, a little over a week after ERCOT was forced to implement rolling blackouts. How were ERCOT’s system preparations and operations different on February 10th from those on February 2nd? Are there any preliminary observations ERCOT can make with respect to reforms it may have implemented in system operations, communications or in any other area?

Answer. While the weather was nearly the same with regard to temperature on February 10 as it was on February 2, the wind speed was significantly lower on February 10. Wind speed and wind chill appear to have had an important effect on the generation outages experienced on February 2. Additionally, it appears that those generators who had experienced freezing equipment on February 2 had the opportunity to correct issues, or perform additional winterization after the first event. For both the February 2 and February 10 events, ERCOT procured additional capacity through the ERCOT Reliability Unit Commitment (RUC) process. The additional capacity procured on both occasions allowed many larger generators to be warm and on-line. However, a large number of generating units that were on-line February 2 tripped, whereas on February 10 the generators called to come on line performed as planned.

ERCOT would also like to note that it sponsored a “Lessons Learned” meeting with electric generators on February 8, 2011. In the meeting, ERCOT explained the reasons for the Energy Emergency Alert (EEA) and firm load shed as being related specifically to the large number of forced outages and failure to start of several generators.

As a result of the lessons learned from the events during the cold weather events between January 31 and February 6, 2011, ERCOT implemented the following before its new winter peak was set on February 10, 2011. These initial changes primarily addressed communications shortcomings related to the February 2 events:

- The phone numbers of several people outside ERCOT (selected members of the DUCT the ERCOT Board of Directors) were added to the emergency communication (NXT Notification) system. This notification system sends pre-recorded voice messages if a Watch is issued, if an EEA level is implemented, and if firm load shed is ordered.
- The responsibility to activate the NXT Notification system was moved from the ERCOT Shift Supervisor to the Shift Engineer. This helps to free up some of the Shift Supervisor’s time during an emergency.
- To correct an inadvertent error with the email system, all Board members were added individually to the gridemergency@lists.ereot.com email list.

ERCOT is also working with the PUCT and market participants to ensure that appropriate weatherization standards are met, to address both extreme cold and hot weather situations in the ERCOT region. In addition, ERCOT is making efforts to improve coordination with regulators and market participants in the natural gas industry to effectively maintain reliability of electric and gas systems during future challenges.

Fortunately, the peak demand on February 10 was met without ERCOT having to resort to emergency procedures. ERCOT believes that the new role for Shift Engineers in the ERCOT control room, as well as the new communications procedures, will improve ERCOT’s response to future emergency events.

Question 5. ERCOT has said that it experienced issues with its external communications that highlight the need for improved communication with a variety of audiences, including the Texas Public Utility Commission, market participants and the public. Where in that list would entities like neighboring states, gas producers and gas pipelines fall?

Answer. Section 4, Emergency Operations, of the ERCOT Operating Guides outlines the steps taken by ERCOT and its member transmission and generation companies during system emergencies. Section 4.5 Energy Emergency Alert (EEA), provides for issuance of an ERCOT-wide appeal through the public news media for voluntary energy conservation (4.5.3(3)). Additionally, this section states that QSEs (Qualified Scheduling Entities that represent generation owners) and TOs (transmission owners who operate the transmission facilities, including distribution feeders) will notify all the Market Participants they represent of each declared EEA level (4.5.3(1)). Section 6.5.9.4 Energy Emergency Alert of the ERCOT Protocols has similar language regarding issuance of public media appeals to conserve energy (6.5.9.4(4)). Through these various forms of public communication, ERCOT endeavors to provide broad notice of the events in its region.

ERCOT also files daily reports with the North American Electric Reliability Corporation (NERC) that profile ERCOT's forecasts for the day, as well as identify EEA conditions. When emergency events are developing, ERCOT also notifies Reliability Coordinators in neighboring states through the electronic "Regional Coordinator Information System" (RCIS). In addition, ERCOT provides specific notice to the Southwest Power Pool (SPP), its neighboring electric grid operator. ERCOT also files notices of emergency events to the U.S. Department of Energy, almost immediately after such events occur.

As noted above, ERCOT does not have direct communications with gas producers or gas pipelines during EEA events. As part of its response to the February 2011 weather events, ERCOT is taking steps to coordinate with natural gas regulators and industry participants to address the electric/natural gas interface during extreme weather events.

RESPONSES OF JOHN DUMAS TO QUESTIONS FROM SENATOR TOM UDALL

Question 1. I understand that ERCOT says that Texas is an intra-state electric market. How do we square that with the reports that blackouts in Texas caused around 30,000 New Mexicans to lose home heating?

Answer. The ERCOT Protocols (Section 6.5.9.4 Energy Emergency Alert) and Operating Guides (Section 4.5 Energy Emergency Alert (EEA)) establish rules related to the Energy Emergency Alert (EEA) action plan. Part of this action plan is to shed load in order to match demand and supply (maintain 60Hz frequency). When load shed is ordered, the member transmission owners reduce their load by their load ratio share as indicated in Section 4.5.3.4 Load Shed Obligation of the ERCOT Operating Guides. ERCOT's role is to direct the quantity of load to be curtailed during emergency conditions. ERCOT does not direct the location of the load to be curtailed; this is up to the discretion of the member transmission owners that serve the load.

ERCOT does not have access to information detailing the New Mexico gas curtailments. If New Mexican natural gas industry participants would provide ERCOT with documentation that identifies the specific gas facility outages in the ERCOT region that allegedly impacted New Mexico customers, ERCOT will ask transmission owners in the ERCOT region to review their records for the times that these facilities were interrupted during the February events.

Question 2. Why did ERCOT permit blackouts of critical natural gas infrastructure in the Permian Basin that keeps New Mexicans warm during the winter?

Answer. ERCOT's role is to direct the quantity of load to be curtailed during emergency conditions. ERCOT does not direct the location of the load to be curtailed; this is up to the discretion of the member transmission owners that serve the load.

Question 3. How much money did the companies trading electricity during the period around the blackout make? Could it be in the tens of millions, or hundreds of millions of dollars, as claimed by Public Citizen in Texas?

Answer. ERCOT does not have access to specific information documenting how much individual companies made or lost in the ERCOT market. The ERCOT market is designed to allow customers to buy and sell power bilaterally weeks and months in advance. Customers also have the ability to buy and sell power in the ERCOT Day Ahead Market and avoid being exposed to real-time spot market prices. Generators that have sold their power in the forward bilateral market or in the Day Ahead Market are exposed to real-time spot market prices if they are not able to physically cover the forward schedules that they have committed to cover in the bilateral and Day Ahead Markets. This means that some generators that were unable to generate on February 2, 2011 were forced to buy energy at real-time spot market prices during a time of extremely high market prices. It is clear from public reports that this exposed some companies to large losses due to the events of February 2

in the ERCOT region—and that no market segments were immune from losses. For example, Luminant (a generation company) disclosed that it lost approximately \$30,000,000 when two of its large coal plants (Oak Grove and Sandow) came off-line due to the cold weather, resulting in a capacity loss of nearly 2,700 MW. See Dallas Morning News, Feb 14, 2011.

Question 4. What happened during the 2003 severe winter storm that led one large power producer in Texas to be fined \$210 million, which was reduced to \$15 million? Is Texas doing enough to prevent market manipulation?

Answer. There were no findings by the PUCT or the PUCT's Independent Market Monitor ("IMM") of market manipulation, nor were there any administrative penalties assessed against any market participants related to the 2003 severe winter storm. Although referencing the 2003 severe winter storm, this question appears to be in reference to the investigation initiated in 2007 by the PUCT and prepared by Potomac Economics (in its role as the IMM for the ERCOT wholesale markets) related to the wholesale market activities of Luminant Power Generation Company, LLC¹ from June 1 to September 30, 2005. Additionally, the activities of Luminant that were the subject of this investigation were not the result of a severe weather event.

The PUCT Staff enforcement action against Luminant was based on a 2007 investigation by the IMM. In the enforcement action filed on March 28, 2007, PUCT Staff alleged that Luminant had engaged in market power abuse as defined in § 39.157(a) of the Texas Public Utility Regulatory Act² and § 25.503(g)(7) of the PUCT's substantive rules.³ In its March 28, 2007 filing, PUCT Staff recommended that Luminant be ordered to pay \$210 million, which consisted of an administrative penalty of \$140 million and refunds of \$70 million.

On September 14, 2007, PUCT Staff filed a revised enforcement action that corrected an error in the calculations and simulations underlying its original enforcement action and recommended an administrative penalty of \$171 million. On July 22, 2008, the Administrative Law Judges (of the independent State Office of Administrative Hearings) assigned to Docket No. 34061 issued an order which concluded as a matter of law that the appropriate methodology for calculating separate violations under PURA §15.023 in this proceeding would have resulted in a maximum penalty range of between \$7.9 million and \$15.4 million. A copy of the *ALJ's order is attached.

On November 26, 2008, Staff and Luminant filed a joint settlement agreement in which Luminant agreed to pay an administrative penalty of \$15 million. In the settlement agreement, Luminant expressly denied any admission of liability for the allegations set forth in Docket No. 34061.

The PUCT has informed ERCOT that it believes it has ample legal authority to address market manipulation issues, and that the IMM and the Commission have taken and will continue to take appropriate actions to address market manipulation issues in the ERCOT market. Significantly, when the alleged market power abuse violations which were the subject of Docket No. 34061 took place, the maximum administrative penalty allowed under PURA was \$5,000 per violation per day. Effective September 1, 2005, the Texas Legislature increased the maximum administrative penalty amount to \$25,000 per violation per day.

Question 5. Could you explain the electricity price cap changes before the storm?

Answer. The electricity price cap change that occurred on February 1, 2011 was scheduled years in advance in PUCT rules adopted in 2007. In the PUCT rules, specifically Section 25.505(g) of the Commission's substantive rules, the increase to \$3,000 was to be implemented two months after the implementation of the new nodal market in the ERCOT region, which occurred on December 1, 2010. The specific language from the PUCT rules reads, "Beginning two months after the opening of the nodal market, the HCAP shall be \$3,000 per MWh and \$3,000 per MW per hour." (§ 25.505(g)(6)(D)) The timing in the change of the pricing rules was therefore set well before the weather events in February 2011.

¹The IMM investigation and subsequent enforcement action brought by the PUCT Staff involved TXU Corp. and several of its affiliated companies. After the enforcement actions were filed, TXU Corp. and its affiliates were merged with Texas Energy Future Holdings Partnership. As a result of this merger, TXU Corp. changed its name to Luminant Power Generation Company, LLC. The TXU Corp. affiliates were also renamed. For ease of reference, the name Luminant is used in this response to include all of the companies involved in the PUCT enforcement action.

²Public Utility Regulatory Act, TEX. UTIL. CODE ANN. § 39.157(a) (Vernon 2007 and Supp. 2008) (PURA).

³P.U.C. SUBST. R. 25.503(g)(7).

*ALJ's order has been retained in committee files.

Question 6. Would more interstate interconnections like Tres Amigas near Clovis make Texas electricity more reliable and prevent rolling blackouts?

Answer. An increase in the number of interconnection points would only improve the reliability of the ERCOT grid during a capacity shortage event if: spare generating capacity was available on the other side of the tie(s) and was not being used to serve customers on that side of the tie(s) during the event; and, sufficient transmission capacity is available on both the sending or receiving side of the tie(s) to allow energy to be moved from the spare generating capacity to the tie (on the sending side) and from the tie to loads in ERCOT. Additional interconnection(s) would not, per se, improve the reliability of the Texas grid. The existing Direct Current (DC) Ties into the ERCOT Interconnection are subject to curtailment when emergency situations exist in the other interconnections, even during comparatively mild operating conditions. ERCOT is monitoring the development of the Tres Amigas project and its various ramifications.

Question 7. How many power plants in Texas went down during the storm? The reports we see keep rising, first it was 50, then 83, then over 100.

Answer. The numbers referenced in Question 7 are drawn from reports prepared by ERCOT that are based on different time periods during the February 2011 extreme weather events. To clarify the data, ERCOT offers the following:

- The numbers are associated with generating “units.” An electric “power plant” may be made up of numerous “units,” particularly in large generating facilities. In addition, a combined-cycle facility may be composed of more than one unit.
- The data provided by ERCOT regarding the units that “went down” are based are the number of units that experienced a “forced outage,” as defined in ERCOT’s market rules, during the relevant time period. The units involved may have experienced outages for a significant period of time, or may have tripped off briefly and returned to service sometime during the day of the weather events.
- The data gathered by ERCOT, on its initiative and in response to data requests from the PUCT and the Federal Energy Regulatory Commission (FERC), address several time periods. These include the period leading to and during the rotating outages ordered by ERCOT, the full operating day of February 2 (the day of the rotating outages), and the time period extending from February 1-4, 2011 (the full time period of unusually cold weather conditions in the ERCOT region).
- ERCOT has developed its data on generation outages through review of its internal operator records, Outage Scheduler information, telemetry data received from generators, and responses to information requests sent to generators. The data has been more thoroughly vetted through this process than it could be in the days immediately following the February events.

Based on these criteria, ERCOT has identified the following forced outages during the time periods identified:

Time Period	Number of Units with Forced Outages
February 2, 2011: Midnight to 5:43 AM (time of declaration of EEA3 and rotating outages)	50
February 2, 2011: Midnight to 1:00 PM (ERCOT concluded rotating outages at 1:07 PM)	91 (originally estimated at 82 units)
February 2, 2011: Midnight to 11:59 PM (the full operating day of February 2)	102
February 1-4, 2011: The full period of the winter storm (data for this period was developed in response to PUCT request)	151

ERCOT notes that there were also outages on February 2, 2011 in parts of Texas outside the ERCOT region. Both El Paso Electric Company and Xcel Energy experienced outages, and the outages in those companies' territories also involved generation problems. The data for areas outside the ERCOT region are not included in ERCOT data provided above.

