

Capital Reporting Company
Public Meeting #7: Gas-Electricity Interdependencies 07-28-2014

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QUADRENNIAL ENERGY REVIEW

PUBLIC MEETING #7:

Gas-Electricity Interdependencies

Monday, July 28, 2014

Metropolitan State University of Denver

Auraria Campus, St. Cajetan's Center

1190 9th Street

Denver, Colorado

Reported by: Roger Meyers,
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1 A P P E A R A N C E S

2 Dr. Karen Wayland, Department of Energy

3 Peggy Welsh, Energetics, Inc.

4 Dan Utech, Special Assistant to the President for
Energy and Climate Change

5

Commissioner Pamela Patton, Colorado Public
6 Utilities Commission

7 Rae McQuade, President and COO, North American
Energy Standards Board

8

Kelli Joseph, Senior Gas & Electric Analyst, New
9 York Independent System Operator (NYISO) on behalf
of ISO-RTO Council

10

Lynn Dahlberg, Director, Marketing Services,
11 Williams - Northwest Pipeline GP and on behalf of
the Western Gas-Electric Regional Assessment Task
12 Force

13 Joe M. Holmes, Lead Energy Trader, Colorado
Springs Utilities

14

David Eves, President and CEO, Public Service
15 Company of Colorado

16 Curtis Moffatt, Deputy General Counsel and Vice
President - Gas Legal, Kinder Morgan, Inc.

17

Clifton Karnei, Executive Vice President and
18 General Manager, Brazos Electric Cooperative

19 Beth Musich, Director Energy Markets and Capacity
Products, Southern California Gas Company and San
20 Diego Gas & Electric Company and on behalf of the
Western Gas-Electric Regional Assessment Task
21 Force

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1 A P P E A R A N C E S (Cont'd)

2 Arne Olson, Partner, Energy & Environmental
3 Economics(E3) and on behalf of the Western Natural
4 Gas-Electric Interdependency Study

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1 P R O C E E D I N G S

2 MODERATOR WELSH: Good morning. I want
3 to welcome you to the QER Public Meeting #7. We
4 are very pleased to be here in Denver to discuss
5 the issue of the Electric Natural Gas
6 Interdependencies and related issues.

7 My name is Peggy Welsh. I'm with
8 Energetics, Incorporated. We are a contractor to
9 the Department of Energy, and it's my honor today
10 to be the meeting facilitator. We have an amazing
11 group of distinguished speakers today and we start
12 today with a very distinguished panel of VIP's.

13 Before we get into that, I have a few
14 housekeeping notes. One of the things that we
15 want to talk about is why we are -- what is the
16 purpose of today's meeting. And so I have a
17 little statement that I'd like to read.

18 "Pursuant to the Federal Advisory
19 Committee Act, the purpose of today's meeting is
20 to ask for your individual input or your
21 organization's input regarding Electricity Natural
22 Gas Interdependencies and to provide a forum for

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1 information exchange. To that end, it would be
2 most helpful to us for you to provide these
3 recommendations and information based on your
4 personal experience, your individual advice,
5 information and facts regarding this topic.

6 The object of today's meeting is not to
7 obtain any group position or consensus. Rather,
8 the U.S. Department of Energy and the White House
9 are seeking as many recommendations as possible
10 from all individuals at this meeting."

11 So we want to hear from all of you. Let
12 me remind people that we are also livestreaming
13 this meeting, so welcome to those who are watching
14 via livestream. We also want to hear from as many
15 people who made the trip to attend in person. If
16 you'd like to speak, you need to sign in at the
17 front desk.

18 If you don't want to speak -- and some
19 people are timid about doing that -- we really
20 encourage everyone to submit comments. Every
21 single set of comments is reviewed extensively and
22 is considered as part of this process. And that

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1 address for submitting comments is
2 QERcomments@hq.doe.gov. The Department of Energy
3 is serving as the Secretariat to the QER Task
4 Force and so they are the ones receiving the
5 comments.

6 With that, let me turn and introduce to
7 you Dr. Karen Wayland who is the Deputy Director
8 of the Department of Energy's Office of Energy
9 Policy and Systems Analysis for state, local and
10 tribal cooperation. She is leading this effort to
11 receive input from all stakeholders.

12 Karen.

13 DR. WAYLAND: Thank you very much,
14 Peggy. And thank you all for coming here. I know
15 that this is not a regular part of your day job
16 and many of you traveled quite a distance to come
17 here.

18 I want to assure you how important the
19 stakeholder meetings are here. In fact, in the
20 Presidential Memorandum directing the
21 Administration to conduct the Quadrennial Energy
22 Review, there's actually a couple paragraphs

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1 talking about the stakeholder engagement process.
2 It is quite significant and important to both our
3 analyses and the recommendations.

4 To that end, as Peggy mentioned, we are
5 livestreaming and recording. We have a court
6 reporter here so that we'll have transcripts and
7 we'll also have meeting summaries. Those all get
8 posted on the web, so for the sake of transparency
9 the public knows who we've been listening to and
10 talking to. But, also we'll be using that
11 information in our analyses and recommendations
12 and I can assure you that each one these meetings
13 -- we've had seven so far -- we've learned
14 something new. In fact, even the Secretary has
15 sat through some of the panels and walked away
16 saying, "Boy, that was a great panel." And, once
17 again, we have fabulous panelists that have come
18 together to help us figure out what the crux of
19 the issues are in energy, transmission, storage
20 and distribution.

21 As Peggy mentioned we have a website and
22 a comments email. The website is

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1 www.energy.gov. All of the statements of the
2 panelists, the transcripts, the meeting summaries
3 and presentations will be posted there either
4 directly after the meeting or within the next few
5 weeks. We have four more meetings scheduled --
6 five more meetings scheduled, actually, although
7 there will be more following.

8 We've got one in Chicago and one in
9 Bismarck. Both of those will be on August 8th.
10 We've got one in Santa Fe on state, local, tribal
11 Issues on the 11th. We have one in Cheyenne,
12 Wyoming on Infrastructure Siding on August 21st.
13 And we have a new one scheduled that will be
14 September 8th looking at electricity issues with
15 an Eastern focus.

16 It's my pleasure now to introduce the
17 panelists. The first speaker will be the Special
18 Assistant to the President for Energy and Climate,
19 Dan Utech. And it is a really special pleasure
20 for me to for me to be able to say that since we
21 were Senate staffers together years ago. He was
22 with the Senate Environment Public Works Committee

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1 and then for five years as a staffer for Senator -
2 - I almost said Secretary -- but back then Senator
3 Clinton.

4 He was a special advisor to Secretary
5 Chew and then went over to the White House and has
6 now become Special Assistant to the President. So
7 it is with great pleasure and honor that I get to
8 introduce Dan Utech.

9 DIRECTOR UTECH: Thanks, Karen.

10 Can everyone hear me okay? Great.

11 Well, it's a real pleasure to be here
12 this morning with Karen, with Mr. Patton and
13 others. Really thank everyone for both the
14 panelists and also members of the public that came
15 to provide input today. I think, as Karen said,
16 this is a really important part of the process
17 that we're going through to develop some
18 recommendations in this space under the QER and so
19 thank you very much for being here.

20 Before we dive in to the QER, I want to
21 step back a little bit and look at the big picture
22 from the Administration's perspective.

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1 President Obama has been committed to an
2 all-of-the-above energy strategy and one that
3 develops -- aims to develop a diverse portfolio of
4 American made energy. And I think if you look at
5 the last five years alone, our energy landscape
6 has transformed in some remarkable ways thanks to
7 efforts at the federal, state and local level, and
8 also investment by the private sector. So I'm
9 just going to hit a few highlights.

10 First is that U.S. crude oil production
11 averaged 7.4 million barrels per day in 2013.
12 That's up from five in 2008. The upward trend has
13 continued this year. In April of 2014, production
14 reached 8.4 million barrels per day, the highest
15 level in nearly 20 years. And for the first time
16 in nearly two decades, we have produced more of
17 our oil here at home than we buy from other
18 countries.

19 Along with oil production, gas
20 production has boomed and I'll come back to that,
21 but the U.S. is now the top gas producer in the
22 world. You know, we were -- when Karen and I were

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1 working together up on the Hill, everyone was
2 frantically figuring out whether we could site
3 enough LNG import terminals to satisfy the natural
4 gas demands of the U.S. and now we're looking at
5 exporting some gas along with the many other uses
6 that we're making that resource.

7 Renewable energy is getting cheaper and
8 deployment and generation are up sharply.
9 Colorado is a huge leader in this area. But since
10 2008, the price of solar panels has fallen by 75
11 percent and solar insolation has increased by a
12 factor of 13 in that timeframe. We've seen some
13 of the biggest utilities projects come online,
14 solar projects. And in addition, wind generation
15 has more than tripled in the last five years. So
16 we've seen remarkable progress in renewables as
17 well.

18 We're making good progress in efficiency
19 in the transportation. Specifically, we're seeing
20 declining gasoline demand, in part due to the
21 historic fuel economy standards that were set
22 during the first term, which essentially will

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1 double the fuel economy of the light duty vehicle
2 fleet cars and light trucks between 2012 and 2025.
3 And that will save -- it will cut 6 billion tons
4 of carbon pollution, cut oil consumption by 12
5 million barrels of oil and save consumers about
6 \$1.7 trillion at the pump over the lifetime of
7 that program.

8 In addition, we've seen the construction
9 of the first new nuclear plants in decades,
10 historic investments in carbon capture technology
11 and record production of biofuels. So, when you
12 put it all together, these trends should mean more
13 affordable energy, more jobs in energy, and very
14 importantly less pollution from the energy sector.
15 In 2013 carbon dioxide emissions from energy
16 sources were 11 percent lower than in 2007.

17 So the President's goal is still further
18 than that. He set a goal in 2009 of reducing
19 greenhouse gas emissions 17 percent below 2005
20 levels by 2020. And last June released a roadmap,
21 The Climate Action Plan, that outlines a series of
22 steps to take us from where we are today, which is

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1 part way towards that goal, all the way to that
2 goal and beyond. One of the things that's -- so
3 I'm going to talk about two key initiatives, the
4 second is the QER.

5 The first is the Power Plant Rules that
6 EPA put forward on June 2nd and that there will be
7 public hearings on here in Denver tomorrow --
8 starting tomorrow. This is the Clean Power Plan
9 the EPA put forward. This is a proposal for the
10 first time to set carbon standards that apply to
11 the existing power generation fleet and this will
12 have enormous benefits. By 2030, it will reduce
13 nation-wide carbon emissions in the power sector
14 by about 30 percent from 2005 levels and will
15 include significant cuts by 2020 as well.

16 The proposal will also cut hundreds of
17 thousands of tons of harmful particle pollution,
18 sulfur dioxide and nitrogen oxides as a co-
19 benefit. This will provide important health
20 protections to the most vulnerable, such as
21 children and older Americans, and by EPA testament
22 this will lead to health and climate benefits for

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1 an estimated \$55 to \$93 billion in 2030.

2 So this is a huge opportunity for all of
3 us to move to cleaner power while continuing to
4 provide safe, reliable and affordable electricity.

5 To realize those benefits, the plan will
6 need to work on the ground and that's why EPA
7 conducted an extensive outreach before putting out
8 a proposal and that's why they're going around the
9 country, as they are here in Denver tomorrow, to
10 gather additional input.

11 So we think it's a really strong
12 proposal, one that achieves the core objectives of
13 reducing carbon pollution while maintaining
14 reliable, affordable electricity and fuel
15 diversity and I think it's going to be an
16 important driver for innovation and investment in
17 a clean energy space in including a long-term
18 incentive, and long-term signal that the private
19 sector needs to make commitments.

20 So with that, I want to pivot to the
21 Quadrennial Energy Review and I think one of the
22 inspirations for this project is the fact that all

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1 of the rapid change that I talked about in the
2 energy space is presenting huge benefits. It's
3 also producing some challenges. You know, our
4 current energy infrastructure is increasingly
5 challenged by transformations in energy supply,
6 markets, patterns of end use, issues of aging and
7 capacity, impacts of climate change and cyber and
8 physical threats.

9 So this first Quadrennial Energy Review
10 we hope will serve as a roadmap to address these
11 challenges, but we are starting by going out and,
12 as mentioned, we've done 7 sessions, we're also
13 doing -- collecting input through a whole variety
14 other ways to hear from public, from experts about
15 how to get at some of these challenges. So that's
16 taken us from New England to discuss gas supply
17 issues, to Louisiana to discuss oil transport
18 infrastructure, and today we're going to here in
19 Denver to talk about the Gas- Electricity
20 Interdependence.

21 So I just want to offer a couple of
22 thoughts to frame up this conversation.

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1 First is that the natural gas and
2 electricity networks in this country are essential
3 to our economic vitality and our way of life.
4 Natural gas is used directly in our homes,
5 businesses and in industry and in power plants to
6 generate electricity. In the power sector, gas is
7 used to generate 12 percent of electricity in
8 1990. In 2013 that number was up to 27 percent
9 and it's expected to continue to grow.

10 There are a number of drivers for that.
11 For example, gas compliments renewable energy in a
12 number of states like Colorado who move forward
13 with regional or state renewable requirements or
14 carbon emission targets. But the biggest driver
15 is the rapid increase in Shale production I
16 referred to at the start. As I mentioned, today
17 the U.S. is the largest gas producer in the world.
18 In the Marcellus Shale Pennsylvania and other
19 areas in the East Coast have gone from virtually
20 nothing to being today -- they would rank as the
21 seventh largest producer in the world if that
22 Marcellus region were a country.

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1 So huge changes in that space and we
2 expect and our Energy Information Administration
3 projects continued growth and production in the
4 coming years, about a 50 percent increase between
5 now and 2040.

6 So this rapid increase in production has
7 changed the locations of supply necessitating
8 investments in new pipelines and processing
9 facilities. The market has responded. We have a
10 system that works well in many places. Between
11 2003 and 2013, more than 12,000 miles of pipeline
12 was built at a more than 86 BCF per day of
13 pipeline capacity.

14 But in some regions, the combination of
15 changing demand, both absolute demand for gas
16 across industry and power generation and the
17 increasing demand for natural gas in the power
18 sector combined with the changing supply
19 geography, has resulted in some regional
20 constraints, most notably in the Northeast, but
21 also in some other places.

22 Beyond these regional constraints, we

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1 know that that additional capacity will be needed.
2 The Inga Foundation recently estimated that
3 between now and 2035 more than \$300 billion of
4 additional midstream infrastructure will need to
5 be added.

6 So with all of these factors to factor
7 up, the growing interdependence of our gas and
8 electricity systems is the focus of today's
9 meeting and I think it's a really important topic
10 to discuss. We know that utilities, pipeline
11 operators, regulators and policymakers at the
12 state & federal level are looking at ways to
13 strengthen the reliability and resilience of our
14 energy infrastructure.

15 We look forward to learning more about
16 planned studies that are underway, efforts to
17 establish better processes for gas-electric
18 coordination, what role the Federal Government can
19 play in helping to harmonize markets and operating
20 procedures between the gas-electricity sectors,
21 with all that taking into account the
22 circumstances of different regions as well as

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1 different users of natural gas.

2 So in closing, I want to return to where
3 I started. We're going through a time of rapid
4 change in the energy landscape. That's hugely
5 positive in many ways, but also presents some
6 challenges such as the one we're here to talk to
7 you about today. I'm confident that by working
8 together we can take advantage of these
9 opportunities presented by those changes, meet our
10 shared objective and evolve energy landscape
11 towards a better system.

12 So I look forward to terrific discussion
13 today. Thank you very much.

14 MODERATOR KELLEY: Thank you, Dan.

15 Now, it's my privilege to introduce
16 Commissioner Pam Patton, a fellow sheep farmer,
17 who has a quite storied career after her time
18 raising sheep, which I'd love to talk to you
19 about, because I'm sure your experience in
20 Colorado was a little different than a puny little
21 New England sheep farm.

22 But after that, she spent twenty years

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1 as an intelligence officer in the Navy, came back
2 to Colorado and was appointed recently by Governor
3 Hickenlooper to the Colorado Public Utilities
4 Commission for a four-year term. She was on the
5 La Plata Electric Association board of directors
6 for 12 years. She's a credentialed co-op director
7 and has a co-op board leadership certificate from
8 the NRECA and she served on many boards around
9 electricity and power and also active in a number
10 of civil society.

11 She was awarded the Barbara Conrad
12 Leadership Award and the Morley Ballantine Award
13 for business leadership. So we're quite honored
14 and privileged to hear from her this morning.

15 COMMISSIONER PATTON: Thank you, Dr.
16 Karen. And we'll be talking about sheep after and
17 that's very interesting.

18 Good morning, everyone.

19 I was really pleased to hear Dan's
20 remarks first because it's going to allow me to
21 shorten up some and they were outstanding.
22 Colorado is very pleased to play host to this

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1 forum on this critical subject of Gas-Electricity-
2 Interdependence. Safety and reliability being
3 mission number one for everyone in both industries
4 and all of the regulatory commissions.

5 I would really like to commend DOE with
6 the approach that they are taking with this
7 Quadrennial Energy Review. And I will tell you at
8 the outset that I didn't understand it was going
9 to be as complex and effective, I believe --

10 MODERATOR WAYLAND: I'm not sure we did.

11 COMMISSIONER PATTON: That could be.

12 That could be. When Secretary Moniz was out here
13 for the dedication of the EISPC at Emril (ph), he
14 discussed it and then you guys sent John
15 Depershing (ph) on the road, at least in Colorado,
16 to talk with a lot of people in the industry about
17 it and we were began to see that this was this was
18 not just going to be a book on the shelf.

19 But I don't think it was until we got
20 into the public feedback and the stake holder
21 issue meetings that we began to realize what the
22 extent of these issues are, and as everyone has

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1 said here, this is the seventh and there are more
2 to come.

3 I was really pleased to see that you
4 were adding another one even on the East Coast
5 because I am particularly pleased and we are
6 particularly pleased in Colorado, there's quite a
7 lot of Western emphasis leaving here, Bismarck,
8 North Dakota; Santa Fe; Cheyenne, Wyoming. It's
9 really impressive to see the Department of Energy
10 out here and in the West. So thank you so much.

11 And thank you for coming to this state.
12 This particular state, as Dan mentioned, is a good
13 place to talk about energy because, just like the
14 President, this state is interested in all-of-the-
15 above energy production and we have it. We are
16 seventh overall in the United States for energy
17 production. We are sixth for natural gas and it's
18 hard to stay up there at six, but we're doing it.
19 And ninth for crude oil.

20 And we're not here today to talk about
21 Colorado, I understand that, but we're also in the
22 top ten for wind production and I could keep going

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1 on the renewable side as well. I'm looking out at
2 Public Service Company CEO, David Eves. I think
3 he'll be talking a little bit more about that, but
4 he may mention a time in which 60 percent of
5 Xcel's energy needs in Colorado were taken care of
6 by wind and this didn't last for too long, but
7 it's an impressive number.

8 We also have ten of the nation's top 100
9 natural gas fields and that counts even with the
10 Marcellus playing in there, although you notice we
11 had to go down to 100 now to get top -- to get our
12 ten in. And the industry here in Colorado has
13 created 35,000 new jobs in the last ten years, so
14 very, very significant industry for us.

15 And as has already been mentioned, we
16 see ourselves and we are leaders in addressing the
17 environmental impacts of the electricity sector in
18 Colorado. Starting back in 2004 when Colorado's
19 voters and then legislature adopted the very first
20 in the nation renewable portfolio standard, and
21 that standard has continued to become more robust
22 over the years.

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1 But I think it's in 2010, the activity
2 that took place here that's perhaps most germane
3 to what's going on here today and that was a
4 bipartisan effort that started with industry --
5 the gas industry, the electricity industry, the
6 environmental community working together to decide
7 what to do about the aging coal fleet and ozone
8 issues and pollution issues on the Front Range and
9 that eventually resulted in a bipartisan effort in
10 the state legislature called the Clean Air, Clean
11 Jobs Act that closed out 900 megawatt production
12 of coal and created some very, very serious fuel
13 switching to natural gas here.

14 I think, David, you're probably going to
15 talk specifically to that in your panel. So
16 pretty impressive effort.

17 And over on the rest of the
18 environmental side, because of our oil and gas
19 production, we really understand the environmental
20 impact of oil and gas here as well. And last year
21 Colorado became the first state in the nation to
22 work with the industry and with the environmental

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1 community to come together on the first ever rules
2 for methane emissions in oil and gas production
3 here in the state. It's working for us and it's
4 going to work for the nation.

5 So while I just said that the Department
6 of Energy picked the right place to come to talk
7 about this topic, I'm not so sure that that's true
8 when it comes to regional gas and electricity
9 interdependence, at least for the state of
10 Colorado.

11 Our natural gas production increased 38
12 percent between 2007 and 2012, and even though we
13 heat three-quarters of our homes across the state
14 with natural gas, and as you know we use natural
15 gas in our industries here, as well for our
16 increasing electricity and for integrating
17 renewables, we just simply don't see the
18 significant problems that are seen elsewhere
19 regionally.

20 And in fact we, of course, have the
21 Eastern Terminus of the Rocky Mountain Express
22 Interstate Gas Pipeline here, which when it was

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1 originally termed I think they called it the Shale
2 to Shining Shale Project. And now we will see how
3 that -- what direction that pipeline ends up
4 going.

5 But, it's interesting to me that -- so
6 we're just a little tiny piece of the WECC, but
7 the WECC is working very diligently on Gas-
8 Electricity- Interdependence and it was just over
9 the weekend hot off the PDF press came the
10 executive summary for the second phase of a DOE
11 sponsored study on Gas- Electricity-
12 Interdependence. It's excellent and they've
13 narrowed it down at this point I think to six case
14 studies.

15 And only one of those case studies is in
16 effect on the front range of Colorado and I
17 haven't had an opportunity to read that yet. I'm
18 looking back, I think it's Wednesday, but I think
19 we'll be hearing more about that soon along.

20 So it's a very big pleasure for me to be
21 sitting next door right here to Dan Utech
22 personally, because the last time I saw him was by

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1 video- teleconference when he had to video-
2 teleconference with the regulatory utility
3 commissioner in Dallas, could not get away from
4 Washington that day, so we got to see him on the
5 big screen instead and I think we're very, very
6 fortunate that he came to Denver.

7 So here we are in Denver. This is a
8 typical, beautiful day in the Rocky Mountains.
9 This is the way it always is here in the summer
10 and it's frequently like this in the winter. But
11 at that same conference when I saw you on the big
12 screen, I got to see and hear and listen to FERC
13 Commissioner, Tony Clark, in person talking about
14 these Regional Gas- Electricity-Interdependency
15 Issues. It was an enlightening day. And I think
16 everybody in this room knows that perhaps not all
17 of the students here watching, I know we have at
18 least some students from the Auraria Campus
19 watching, the FERC Commissioner Tony Clark is from
20 North Dakota. And North Dakota, like Colorado,
21 has a real understanding of the perspective of the
22 needs for natural gas and electricity in the

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1 winter and we don't call it all polar vortices out
2 here, we call it winter. And we are prepared for
3 winter and -- but what we would say for everyone
4 across the United States -- and I don't want to
5 tell you that I watched the Game of Thrones -- but
6 winter is coming and we're all going to need to be
7 ready. This is not a trivial topic today and so I
8 look forward to spending the rest of the morning
9 learning with all of you. Thank you very much.

10 PATTON: Thank you, Commissioner.

11 Before I turn this back over to Peggy to
12 run the show for the rest of the morning, I do
13 want to acknowledge two people who are in the
14 audience today.

15 We have a staff member from Congressman
16 Tipton's office and I'm not sure if there are any
17 other Congressional staff here. We thank you very
18 much.

19 Are you with?

20 MR. MacARTHUR: Thomas MacArthur.

21 Great, thank you very much both for
22 coming and --

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1 CONGRESSMAN DEGETTE: Congressman

2 DeGette.

3 COMMISSIONER PATTON: And Congressman

4 DeGette. Wonderful.

5 Another one in the back?

6 CONGRESSMAN PERLMUTTER: Perlmutter.

7 COMMISSIONER PATTON: Congressman

8 Perlmutter.

9 SENATOR BENNETT: Senator Bennett.

10 COMMISSIONER PATTON: And Senator

11 Bennett.

12 Great. Thank you very much for --

13 UNIDENTIFIED SPEAKER: And Senator

14 Udall.

15 DR. WAYLAND: I think it's an election

16 year.

17 COMMISSIONER PATTON: Yeah, I think we

18 got them all. All right. And I want to also

19 introduce -- or I don't have to introduce Alice

20 Madden. I just have out point Alice Madden, who

21 is a -- you know, the daughter of Colorado is on

22 loan to us at the Department of Energy working on

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1 state and local issues from there as the Principal
2 Deputy Secretary of errant (ph) governmental. So,
3 thank you, Alice, for coming. She did come out
4 here, probably not just to see her family, but on
5 business, so thank you.

6 And I will turn this back to Peggy.

7 MODERATOR WELSH: Thank you. Well, I
8 think that we have the opportunity to learn
9 greatly from Mr. Utech and Commissioner Patton and
10 I want to thank you both for sharing your time
11 with us today. We are not going to take questions
12 at this point because we've got a very full day,
13 so please join me in thanking this very stellar,
14 VIP panel.

15 For those of you watching livestream,
16 give us a few minutes to set up for Panel number 1
17 and I'd like to ask those panelists to please join
18 me here in front. Thank you.

19 (Pause while panel sets up.)

20 MODERATOR WELSH: Introduce our first
21 panel. They're going to focus on coordination
22 efforts, regional issues and remaining challenges

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1 of Electricity-Natural Gas interdependencies. And
2 I'd like to introduce the panelists by their names
3 and titles.

4 First, to the left of me is Rae McQuaid,
5 President and Chief Operating Office of the North
6 American Energy Standards Board.

7 Kelli Joseph is next to her, Senior Gas
8 and Electric Analyst with the New York Systems
9 Operator known as NYISO. She's appearing on
10 behalf of the Trade Association, the ISO-RTO
11 Counsel.

12 Then Ms. Lynn Dahlberg, Director of
13 Marketing Services of Williams-Northwest Pipeline
14 Group and on behalf of the Western Gas-Electric
15 regional Assessment Task Force.

16 And finally, Joe Holmes, Lead Energy
17 Trader for Colorado Springs Utility.

18 Before I ask Ms. McQuaid to start, let
19 me just say that the views of the views of the
20 panelists are their own and not those of the
21 Department of Energy or the White House.

22 Ms. McQuaid.

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1 MS. MCQUAID: Thank you so much.

2 MODERATOR WELSH: Yes. Oh, and one
3 other thing, panelists, if you'll please pull the
4 microphones in close to you and there is a timing
5 machine over here, we ask you to summarize your
6 comments in five minutes. So if you'll watch the
7 timer, when it goes to red your time is up. Thank
8 you.

9 MS. MCQUAID: Thank you. I want to
10 thank everyone for having me here today to talk
11 about a topic that our organization has been
12 working on for 20 years. The Gas Industry
13 Standards Board was our predecessor organization,
14 as Peggy well knows, she was helpful in creating
15 the organization, as was the Department of Energy.
16 The Department of Energy had a key role and in
17 fact, helped us name the organization. So that
18 should give you a sense of how the DOE supported
19 this effort.

20 We today have more than 2,000 standards
21 supporting the wholesale electric market. We have
22 1,200 or so standards supporting retail energy

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1 market. And we have about 700 standards supporting
2 natural gas. If you look at the types of
3 standards we have they range from contracting, all
4 the way through to the ultimate sale of the
5 product with everything in between, with business
6 practices and the electronic communications and
7 transaction type standards and cyber security. We
8 do not do reliability standards. We leave that up
9 to NERC.

10 So if you look at the kind of work we've
11 done, in 1994 GISB began to develop the gas
12 transportation nominations deadlines and all the
13 related standards. About 100 plus standards are
14 related specifically to nominations timeline.
15 Since then the -- we and the market have undergone
16 considerable changes. You jump forward to 2000
17 and we became NAESB. We were approached by a
18 number of groups to broaden our standards
19 development to support wholesale electric
20 standards and retail energy standards.

21 Now, if you skip forward to 2004, we had
22 some issues in New England with Gas-Electric

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1 harmonization and then Chairman Pat Wood sent us a
2 letter saying, You need to look at your standards
3 to see what kind of changes are needed to better
4 manage the business transactions. As such, we
5 ended up coming up with a number of standards to
6 support communications between power generation
7 facilities and pipelines, particularly in
8 situations of unanticipated demand.

9 If you jump forward then to 2011, in the
10 Natural Gas Council through the request of then
11 Secretary Chu put out a prudent development Report
12 and in that report the NAESB, as well as a number
13 of other organizations, including the ISES, NERC
14 and FERC were all asked to continue efforts to
15 harmonize interactions between the natural gas and
16 electricity markets. And I was fortunate enough
17 to be part of the counsel when that report came
18 out.

19 So we took that suggestion to heart and
20 at the end of 2012, NAESB used the NTC report as a
21 catalyst and produced a Gas-Electric Harmonization
22 Report. And in that report we had three

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1 primary recommendations that could impact NAESB:
2 looking at standards that would provide greater
3 flexibility in scheduling, looking at standards
4 that would address issues of unsynchronized market
5 clearing times, and looking at standards promoting
6 the availability of information to specific market
7 entities.

8 So we issued that report and we said
9 we're not going to do any of these standards yet.
10 We need to hear back from the regulators on what
11 it is that they want us to do. Well, be careful
12 what you ask for. So we got a notice of proposed
13 rulemaking in March of this year and we were off
14 to the races.

15 The notice of proposed rulemaking is
16 Docket RN142000, and it came out on March 20th.
17 And in that NOPR the Federal Energy Regulatory
18 Commission proposed a set of nomination timelines
19 and asked NAESB with the rest of the industry to
20 determine if those timelines were acceptable or if
21 they had other timelines and adjustments that they
22 would like to offer to the Commission. And we

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1 were supposed to do all this by late September, so
2 we were given a very short timeframe.

3 As a result, we created the Gas Electric
4 Harmonization Group and that Gas Electric
5 Harmonization Group called "The Forum" ended up
6 looking at the timeline and ended up proposing
7 some different aspects of it.

8 They ended up recommending a smaller
9 number of intraday nomination periods where you
10 could adjust your nominations. They did not
11 recommend a specific gas day start and if you read
12 the order the way that I did and the way that many
13 other people did, the Commission set forth a 4
14 a.m. gas day. Because the Forum and NAESB could
15 not come up with an alternative to 4 a.m., we
16 ended up pulling out the 9 a.m. gas day that we
17 had from our standards. So now if you look at our
18 standards, they are being developed and we are on
19 schedule to make the September deadline.

20 Thank you.

21 MODERATOR WELSH: Thank you.

22 Ms. Joseph.

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1 MS. JOSEPH: Hi. Good morning,
2 everyone. My name is Kelli Joseph. I'm with the
3 New York Independent System Operator, although.
4 I'm actually here today also on behalf of the ISO
5 RTO-Council.

6 For those of you who don't know, the
7 seven independent system operators and regional
8 transmission operators operate the nation's bulk
9 electricity grid, administer wholesale electricity
10 markets, and conduct system power planning. And
11 two-thirds of all electric consumers in the United
12 States are served by an ISO or
13 RTO.

14 As we're discussing, natural gas has
15 become the fuel of choice for electric generation.
16 In the last few years all new installed capacity -
17 - over 50 percent of new installed capacity has
18 come from natural gas. And about half of all of
19 the installed capacity in the ISO and RTO regions
20 currently comes from natural gas as well. In some
21 regions this number is actually quite high.

22 The locations of these plants vary. So

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1 in some ISO-RTO regions, gas fired generators are
2 directly connected to interstate pipelines,
3 whereas, in others the majority of gas fired
4 generators are connected behind a local gas
5 distribution company or on an intra-state pipeline
6 and we can talk later about maybe why that might
7 be significant.

8 A couple of important issues to
9 understand regarding some differences in how these
10 two markets are structured and the implications
11 for gas and electric system reliability.

12 The gas and electric markets have
13 different marketing days and different scheduling
14 times. And currently one of the things that this
15 means is that in some ISO and RTO regions,
16 generators receive their day-ahead electric
17 schedule after the close of the day-ahead gas
18 timely nomination cycle.

19 In addition, because of the different
20 operating days, as Ray mentioned, the gas system
21 currently operates with a 9 a.m. to 9 a.m. gas
22 operating day, whereas, on the electric system it

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1 runs from midnight to midnight. What this means
2 is that generators are purchasing gas and
3 nominating gas over one gas operating day, but
4 over two electric days. And again the schedule for
5 that second electric day is not yet known.

6 These scheduling and operating
7 differences matter because while the electric
8 system is scheduled day-ahead, real-time electric
9 system conditions can change from what the day-
10 ahead assumptions were. So when responding to
11 either an unplanned outage in real-time or
12 perhaps low forecasting differences, this can
13 require immediate system operator reaction in
14 order maintain electric system reliability.

15 Most generators in the wholesale
16 organized energy markets are relying on what's
17 called Secondary Capacity Relief or Interruptible
18 Transportation Contracts. And moreover, they're
19 often purchasing gas through marketers. So what
20 this means is that even though gas can be
21 nominated and scheduled every day, it can be
22 difficult sometimes to purchase gas outside of

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1 normal business hours. These are the times when
2 has markets tend to be less liquid. So on
3 weekends, holidays, evening, and overnight hours,
4 it can sometimes be challenging for gas -- or, for
5 generators to purchase their gas.

6 In addition, relying on the secondary or
7 Interruptible Transportation Contracts means that
8 generators could be at risk of not being able to
9 transport gas on days when the pipelines are
10 constrained.

11 Now, on most days when the pipeline is
12 not operating during peak conditions, there is
13 quite a bit of flexibility on the pipeline system.
14 In fact there are some gas pipelines, interstate
15 gas pipelines that actually allow hourly
16 nominations. This is not all pipelines, however.

17 But during times of operational flow
18 orders, when the pipeline system is either
19 constrained or there's another system condition
20 happening on the pipeline system, this flexibility
21 is very limited and if these operation flow orders
22 turn into hourly flow restrictions, this further

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1 limits flexibility for both the gas system and
2 then how generators may be able to respond.

3 As has already been mentioned. the
4 Federal Energy Regulatory Commission, FERC, has
5 taken a number of steps toward better coordinating
6 the gas and electric industries. They held
7 technical conferences over the last few years
8 specifically looking at these issues and as they
9 mentioned put out two notices. The first was an
10 order actually allowing the ISO and RTO's and
11 interstate pipelines to share operational
12 information about both systems, and then the
13 second was this notice of proposed rulemaking,
14 actually looking at these market timing and
15 scheduling differences that I outlined earlier.

16 The ISO's and the RTO's are also
17 individually working and working collectively. We
18 have an effort underway to come up with some
19 shared communication procedures as to how we'll
20 communicate and share operational information with
21 the gas -- between the gas and electric systems
22 and some of the ISO's and RTO's are looking at

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1 potential scheduling changes they can make to put
2 out their day-ahead schedules prior to the close
3 of this day-ahead gas cycle.

4 I'll just mention that the ISO's
5 continue to support the earlier start to the gas
6 day. We believe that this would help to allow
7 generators to purchase gas in this day-ahead cycle
8 in order to cover both the morning peak and the
9 evening peak of the same electric day and this is
10 especially important during winter conditions when
11 pipeline system conditions can change drastically
12 from one day to the next.

13 I can talk later about the EITC effort
14 that's underway, this is a DOE funded assessment
15 to look at the Eastern interconnect and look at
16 the gas and electric system infrastructure
17 adequacy, but I can talk about that later. Thank
18 you.

19 MODERATOR WELSH: Thank you so much.
20 Sorry to cut off what are excellent comments, but
21 we can get into a discussion.

22 Next, Ms. Dahlberg, the floor is yours.

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1 MS. DAHLBERG: Thank you. Northwest
2 Pipeline is a primary natural gas transportation
3 artery in the Pacific Northwest and in the
4 intermountain region. And as has been mentioned
5 here today, the reason we're talking about gas-
6 electric integration is that natural gas is being
7 used increasingly for power generation. And
8 there's many reasons why that's true and I think
9 Dan has already covered those.

10 So consequently, the Federal Energy
11 Regulatory Energy Commission, FERC, initiated a
12 proceeding to ensure that the outages and
13 reliability problems are not the result of a lack
14 of coordination between the gas and electric
15 industries. So FERC has chosen to address
16 basically two items on the national front.

17 One, they want to encourage
18 communications between gas and electric. And two,
19 they want to reconcile the mismatch that occurs
20 that Kelli was just talking about between the
21 electric day and the gas day.

22 And both industries want the same thing.

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1 They both want natural gas to be a reliable fuel
2 source for electric generation and they both have
3 demonstrated a willingness to collaborate.

4 FERC addressed the communication
5 protocol in a final rule last November and in
6 general both industries agreed with the final rule
7 and both industries agreed that it was a good
8 idea. As to the scheduling timelines, FERC --
9 there is now a majority consensus in NAESB for the
10 scheduling timelines. Both industries think it's
11 a good idea.

12 When it comes to the national gas day,
13 there is no consensus that it's a good idea to
14 change it. Northwest Pipeline's customers believe
15 that starting the gas day at 4 a.m. Central Time
16 could hurt their longstanding reliability and
17 impose significant costs with little or no
18 benefit. FERC should consider how these changes
19 will impact all pipeline customers not just
20 electric generators. FERC should also consider
21 the regional differences that occur.

22 Northwest Pipeline's experience is far

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1 different than our sister organization, TRANSCO,
2 that delivers gas on the East Coast. In organized
3 electric markets, generators are dispatched based
4 on the low cost basis. And there's little to no
5 incentive to contract for firm pipeline
6 transportation, which is often more expensive than
7 interruptible transportation. In bilateral
8 markets, the seller agrees to deliver a product to
9 the buyer. The reliability is clearly delineated.

10 The Pacific Northwest has a bilateral
11 electric market and Northwest Pipeline has 24
12 power plants that have the potential to burn a
13 billion cubic feet per day. Twenty-three of the
14 24 power plants have firm pipeline capacities.
15 The power is owned by integrated electric
16 utilities that can recover the cost of holding the
17 firm pipeline capacity through rates approved by
18 their State Commissions.

19 It appears that there is an incentive
20 for gas buyer generators and bilateral markets to
21 hold firm pipeline capacity and there is a
22 disincentive for generators and organized electric

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1 markets. One could argue that this disincentive
2 is frustrating the ability for regions like New
3 England to build the necessary pipeline
4 infrastructure. In New England and Northeast,
5 pipelines often run full during peak day periods
6 and there isn't enough interruptible capacity for
7 electric generators.

8 In contrast, Northwest customers have
9 firm capacity. Regions with an electric market,
10 organized market, that wish to rely on natural gas
11 fired generators to provide electric support -- or
12 support electric reliability must find a way to
13 ensure that the electric industry subscribes to
14 the firm transportation necessary to ensure
15 pipeline expansions.

16 Another regional difference is the hours
17 of daylight, 4 a.m. is 2 a.m. Pacific Time. Some
18 infrastructure in the West is not fully automated
19 and pipeline customers are worried that having to
20 go out in the middle of the night to make manual
21 adjustments is -- they're worried about safety and
22 operational concerns.

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1 Pipelines also believe there is a
2 reliability risk due to the fact that producers,
3 gatherers and processors which are not regulated
4 by FERC and thus do not have to abide by a change
5 to the gas day may not choose to go out in the
6 middle of the night and make the necessary manual
7 adjustments.

8 Some customers believe that the East --
9 this is an East Coast solution that may make
10 things worse for people in the West.

11 In closing, changing the gas day will
12 not address the primary problem and it could
13 create problems that don't exist today. The
14 primary problem is FERC should look -- should make
15 sure that the electric industry subscribes -- find
16 a way for them to recover their costs for
17 subscribing to firm pipeline capacity. Thank you.

18 MODERATOR WELSH: Thank you.

19 Mr. Holmes.

20 MR. HOLMES: Good morning.

21 My name is Joe Holmes and I'm Lead

22 Energy Trader for Colorado Springs Utilities. CSU

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1 is a municipally owned full-service utility
2 providing electricity, natural gas, water and
3 waste water services to businesses and residential
4 customers in the Pikes Peak region. CSU is the
5 second largest utility in the state of Colorado.
6 I very much appreciate the opportunity to
7 participate on this panel today.

8 I am here today as a representative of
9 Colorado Springs Utilities and the American Public
10 Gas Association. APGA is national association for
11 publically owned natural gas distribution systems.
12 There are currently approximately 1,000 public gas
13 systems located in 37 states. Publically owned
14 systems are not for profit retail distribution
15 entities owned by and accountable to the citizens
16 that they serve. Public gas systems primary focus
17 is on providing safe, reliable, affordable service
18 to their over 12 million customers.

19 The issue of Gas-Electric
20 Interdependency/Coordination is important for the
21 public gas systems since it will, among other
22 things, change the manner in which interstate

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1 natural gas pipelines provide services to local
2 gas distribution companies and potentially raise
3 the cost of these services. Given that 95 percent
4 of the public gas systems, including Colorado
5 Springs, are captive to single natural gas
6 pipelines, the importance of this issue to public
7 gas systems cannot be over stated.

8 The current system of nomination cycles
9 has worked well for our public utilities.
10 However, APGA members are very concerned that
11 efforts to improve gas-electric coordination
12 should not resolve in unintended adverse
13 consequences. These prospective consequences
14 include daily operating difficulties and cost
15 increases.

16 In short, the current gas transportation
17 system works well for existing long-term customers
18 and any mandate to significantly change this
19 system to accommodate substantially different
20 customer requirements should also include
21 protections for existing customers and operations
22 and costs.

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1 As it came up during the FERC technical
2 conferences, a lack of adequate gas pipeline
3 infrastructure can create market challenges to
4 accommodating the needs of gas-fired power
5 generators as well as other customers. Many of
6 these concerns expressed that at the FERC
7 conferences are due to problems associated with
8 generators inability to secure gas pipeline
9 capacity in a constrained capacity market. In
10 other words, there is insufficient pipe in the
11 ground to serve all the willing customers.

12 However, with a robust physical
13 infrastructure in place, many of the operational
14 and even scheduling concerns raised would likely
15 be resolved. One problem, especially in New
16 England, appears to be a missing capability for
17 generators to collect the cost of firm physical
18 gas pipeline capacity in their service charges.

19 APGA recognizes that some electricity
20 generators could benefit during their morning wrap
21 up period by an early start in the gas day.
22 However, changing the gas day from 9 a.m. Central

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1 Time to 4 a.m. Central Time, all else being equal,
2 will have adverse impacts on many gas systems.
3 These impacts include hiring additional employees
4 and potential pipeline imbalance penalties, as
5 well as one-time costs associated to IT systems,
6 field equipment, reprogramming gate stations,
7 meters, SCADA, and even contract free
8 negotiations. These impacts need to be fairly
9 considered.

10 Ultimately, the gas system customers can
11 be burdened with these costs while receiving no
12 benefit from the changes, if the changes are
13 simply implemented to benefit one customer class
14 at the expense of another.

15 Public gas systems have maintained that
16 solely focusing on the natural gas industry
17 changes will not solve operational and cost
18 recovery problems in regional power markets and
19 ultimately stands to deflect from the central
20 issues that could be addressed in those markets.

21 That said, it does appear that FERC, via
22 their Dockets in EL14 22 through 27, initiating an

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1 investigation into ISO and RTO scheduling
2 practices, is attempting to follow up on their
3 changes to gas market regulations with conforming
4 changes by RTO's and ISO's.

5 For example, regional electric
6 transmission organizations currently have a wide
7 disparity in their electric scheduling deadlines
8 and appear to have made no uniform effort to
9 synchronize with existing natural gas pipeline
10 schedules.

11 However, FERC order EL14 appears to be
12 designated to promote scheduling conformity,
13 subsequent to the gas pipeline changes currently
14 under discussion in FERC's March NOPR. This would
15 be most helpful. The APGA and its large
16 membership of public gas systems recognizes the
17 need to prepare our natural gas pipeline systems
18 to meet the needs of all the customers.

19 We are prepared to be flexible; however,
20 we are also compelled to aggressively represent
21 our customers with respect to challenges to system
22 operations and cost increases not fairly allocated

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1 to the benefitting customers.

2 Again, I thank you for the opportunity
3 to participate on this panel today and look
4 forward to the upcoming discussion.

5 MODERATOR WELSH: Thank you very much.

6 Well, we've heard a lot of concerns
7 addressed by these panelists today, particularly,
8 regional concerns, the disconnect between the
9 natural gas day and the electric day.

10 So I'd like to go down the panel and ask
11 you all what further coordination efforts can
12 industry and Government do, beyond the FERC NOPR,
13 beyond the NAESB standards. What's missing, is
14 there a gap, and how do we fill the coordination
15 to answer this disconnect?

16 Rae?

17 MS. MCQUADE: All right. Okay. And
18 this is Rae's answer, not NAESB's answer, so I
19 want that on the record up front because I
20 represent both sides of this discussion.

21 I think more discourse is needed, but to
22 be honest, the discussions we've heard, the

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1 remarks we've heard, we've been hearing these
2 remarks for ten years. These are not new. You
3 could in the NAESB meetings, depending on the
4 remarks that were made, identify the person,
5 identify the segment of the market they were in.
6 A lot of those issues are already relatively well
7 understood.

8 The problem is, we don't have the silver
9 bullet to answer all of this. And I do agree that
10 a lot of this is regional. When you do hear about
11 the issues in New England, they are not the same
12 issues you hear about in Arizona. Arizona has its
13 own set of congestion issues that cause problems
14 with gas- electric coordination.

15 These can be handled by a number of
16 different ways. I mean, it's not a one answer for
17 everything. You're going to have to look at
18 regulatory change. You may have to look at
19 contractual changes. You may have to look at the
20 business transactions that are going on, and some
21 operational changes. I don't think it's an easy
22 answer, or we would have done it by now.

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1 So I think we still have a lot of work
2 ahead of us, but it's clear that the markets are
3 shifting in this direction. The statistics that
4 Dan gave earlier point to that, and we need to
5 address it.

6 MODERATOR WELSH: Ms. Joseph?

7 MS. JOSEPH: As Rae said, I think in the
8 discussions that we had at NAESB, there were
9 actually a lot of really interesting concepts that
10 came up, things that I wasn't aware of until these
11 meetings. We had a ton of discussion on this
12 issue. It's very complicated. It's very
13 challenging, but, honestly, every time we do get
14 into a room and have the discussions and new ideas
15 come up, and new potential solutions, I think,
16 come up.

17 You know, we talked at t NAESB some very
18 innovative ideas that included maybe having two
19 different gas days, so a western day and eastern
20 day. We talked about having a common energy day.
21 We talked about how some things worked in the gas
22 market, how they were designed years ago, and

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1 maybe some changes that could happen today.

2 And, you know, I think one of the things
3 that doesn't get discussed a lot is what we can do
4 with gas storage and some things we can do with
5 gas storage markets that might actually help,
6 perhaps, gas storage can operate somewhat like
7 ancillary services do on the electric system.
8 There has really not been a lot of discussion
9 about that, so, you know, I think, again, it's
10 challenging. There's a lot of issues that I do
11 think that there are some potential ideas out
12 there that could help.

13 MODERATOR WELSH: Ms. Dahlberg?

14 MS. DAHLBERG: Thank you. I think the
15 bottom line for me is that if there were adequate
16 infrastructure -- natural gas infrastructure, all
17 around the country, we probably would not be
18 talking about the gas day as a scheduling
19 timelines.

20 MODERATOR WELSH: That's true.

21 MS. DAHLBERG: And I think there needs
22 to be, you know, I guess, I'm a business major,

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1 Economics 101, you have to have the incentives in
2 place to make pipeline infrastructure happen. And
3 I know that's the topic of Panel 2, so I won't get
4 into that, but to me, we wouldn't be talking about
5 the issues if there were the infrastructure in
6 place. The incentives really need to be there.

7 MR. HOLMES: This will be just me. Like
8 Rae, this will be Joe talking, not surely Colorado
9 Springs Utilities or APGA, but we -- the problem
10 seems simple sometimes when you look at why
11 generators have problems making electricity when
12 they're called on. It's because they don't have a
13 firm fuel supply.

14 And it seems to me that maybe an entity
15 like NERC or someone should describe what is the
16 difference between firm power and intermittent
17 power, because it's hard to have a dialogue --
18 which kind of gets to what Lynn is talking about
19 -- it's kind of hard to have a dialogue if you
20 think you have a firm power plant, and it's just
21 ready to go. The only problem is that we can't --
22 you know, we can't get pipeline capacity and we

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1 don't want to buy it.

2 If you build the power plant, and you
3 don't have fuel for it, it's not firm. And so I
4 think we need to get to that point in the
5 dialogue, and maybe there will be, you know, dual
6 fuel power plants which don't need firm fuel on
7 either side, which can -- which, you know, will be
8 some level of firm, but I think we need to get
9 some definition of what we're talking about there.

10 The other thing that I would suggest is
11 that we work to look at the difference between
12 structural issues and financial issues. When I
13 look at ISO New England, for example, or at least
14 up to a year ago or so, it seemed more like a
15 financial issue, not really structural issues. I
16 mean, they don't have enough pipeline in the
17 ground, but the pipelines are willing and able to
18 put that infrastructure in place. They're ready
19 to do it today. I haven't met a pipeline
20 representative yet that doesn't want to talk about
21 expansion.

22 The other side of the coin is the

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1 revenue side. The revenue side, the RTO is not
2 going to pay for it. The generators are not going
3 to pay for that capacity. It's you and me in our
4 homes when we flip the lights on that are going to
5 pay for that pipeline capacity. And I think
6 everything in the middle, between the revenue-
7 paying customers for the electricity and the
8 pipeline, is causing noise that we can't quite get
9 this revenue to travel where it needs to travel,
10 because I for one like firm -- I like flipping my
11 light switch and having the lights come on. I
12 don't want to question whether or not there is any
13 fuel available because it's a cold day outside.

14 So, I think those two things, kind of
15 defining what is an intermittent resource and a
16 firm resource, that distinction; and then
17 separating the physical and financial issues.

18 MODERATOR WELSH: I'd like to follow up
19 on that a little bit, and ask you all, and maybe
20 start with Kelli, what kind of reforms do you
21 think might be useful in an RTO region that can
22 answer these structural and financial challenges?

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1 MS. JOSEPH: So one thing I think is
2 important to point out, while it is important for
3 generators to have fuel. I like Peter Rundin from
4 ISO New England. You know, he said it very well,
5 generators need fuel, he said on -- and it is
6 challenging to think about how we've set up our
7 markets and how we can structure our markets given
8 the increasing nature of just-in-time resources,
9 that that's a challenge across the country,
10 whether it's from gas or from renewable, it's an
11 ongoing challenge.

12 I think it's important to recognize,
13 however, that firm transportation doesn't
14 necessarily mean, (1) that you have no reliability
15 concerns on the electric system and, (2) that it
16 is necessarily easy to have, you know, one of
17 these end day changes that you might need on the
18 pipeline.

19 So, one of the things that's a big
20 effort at all of the ISO's and RTO's is to really
21 get a handle on both the electric system and the
22 natural gas system, and thinking through potential

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1 contingencies on one system that could impact the
2 other.

3 So, if all generators had firm contracts
4 on the gas system, if there was an issue on a
5 handful of pipes, then there would be issues on
6 the electric system regardless of the type of --
7 transportation contract generators had.

8 And, you know, vice versa, there can be
9 issues on the electric system that can impact gas
10 system reliability as well.

11 A lot of the ISO's and RTO's are looking
12 at making some market design changes, to think
13 through fuel assurance, and think through all
14 types of fuel, not just gas, and thinking about,
15 you know, have we structured our markets and
16 created rules that incent the kind of behavior we
17 want from generators. And that's something that
18 we're all looking at.

19 MODERATOR WELSH: What about in the non-
20 RTO regions like here out west?

21 Ms. Dahlberg or Mr. Holmes, you want to
22 take that?

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1 MR. HOLMES: Yeah. I'd like to follow
2 up on what Kelli said, too. She said -- we
3 totally agree. We have some -- we have a large
4 power plant, gas-fired power plant, in Colorado
5 Springs, and my group actually manages the natural
6 gas supply for both the LDC and the power plants,
7 and one thing you realize about power plants is
8 that they can trip, so they can go off in the
9 middle of the night. Doesn't matter what the gas
10 day is, or all the regulations that are around it.
11 It just trips because there's a problem with the
12 plant.

13 We could have another power supply trip,
14 and run a plant up to full load as quickly as
15 possible. And that produces -- these events
16 produce huge swings on the pipeline. And just
17 having transportation capacity to serve, say, a
18 base load type environment is not sufficient to
19 balance the loads on the pipeline or to make the
20 electric resource firm.

21 We really need to talk a lot more about
22 balancing and balancing products. We have a no-

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1 notice transportation agreement with Colorado
2 Interstate Gas Pipeline, and we rely on that
3 heavily for both our LDC load and our power
4 plants. And so I think there is a lot of work to
5 do on that.

6 I forgot the second part of the
7 question.

8 MODERATOR WELSH: I think you covered
9 it.

10 MR. HOLMES: Okay.

11 MODERATOR WELSH: I wanted to know about
12 reforms in an RTO -- non-RTO region.

13 MR. HOLMES: Yeah. Okay.

14 MODERATOR WELSH: Ms. Dahlberg, do you
15 want to add to that?

16 MS. DAHLBERG: No, I think basically in
17 the non-RTO region, flexibility can -- you know, I
18 agree with Kelli. There are -- having firm
19 pipeline capacity isn't a 100 percent guarantee,
20 but it's pretty darn close.

21 I think at Northwest Pipeline, we rely
22 on gas storage. We have a significant amount of

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1 storage, and we use that when there -- if there is
2 an, you know, an upstream pipeline fails to get us
3 that adequate supply into our pipeline, we'd use
4 pipeline storage.

5 We also rely on other pipelines. They're
6 very accommodating when one has a problem, and no
7 one wants the lights to go out, so I think there's
8 a number of avenues that we pursue to maintain our
9 flexibility.

10 MR. HOLMES: Can I make one more
11 comment?

12 MODERATOR WELSH: Sure.

13 MR. HOLMES: The follow-up that I was
14 thinking of is that at Colorado Springs, we
15 actually have firm transportation for our gas-
16 fired generation that we consider to be firm. So
17 we have a hundred percent sufficiency.

18 We also have storage agreements so that
19 we could use storage for balancing, specifically
20 for our power plants, and we have balancing
21 through the no-notice sharing of no-notice
22 storage, as well. And our rate payers pay for

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1 that. And they've always -- you know, the plant
2 has always been firm. We've never had a fuel
3 problem there at this point.

4 MS. DAHLBERG: I do want to add one
5 other thing. Northwest Pipeline is part of a
6 group called PNUCC, Pacific Northwest Utility
7 Commission Conference. And they did a study, and
8 they assumed no natural gas was available to serve
9 any of the gas-fired generation in the Pacific
10 Northwest, and they did this on a peak day, and
11 they assumed that the gas-fired generators that
12 have diesel backup were running, and then, of
13 course, hydro is a huge, huge contributor to
14 electric generation in the Pacific northwest, and
15 they were able to say that they could meet their
16 needs on a peak day.

17 So, I think oil backup is another
18 important thing, but again, the rate payers pay
19 for that. So they pay for their reliability.

20 MODERATOR WELSH: So you all have talked
21 about scheduling difficulties, and NAESB is a
22 standard-setting organization. One of the things

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1 that we at the Department of Energy are thinking
2 about, and I'd like all of you to address, which
3 is a little broader than the specifics, is the
4 electrification of the natural gas industry.

5 We've heard a lot over the years about
6 how the natural gas industry is relying more and
7 more on natural gas, but we're now learning,
8 through scheduling issues and standards and some
9 of the FERC NOPR's that the electrification of the
10 natural gas industry is emerging as a huge
11 challenge.

12 And so I wondered if you all had any
13 general comments on that new development, shall we
14 say?

15 MS. MCQUADE: Sure, I'll start.

16 If you look at what NERC is doing with
17 ensuring reliability, I think they're clearly
18 focused on -- they see both sides of the coin.
19 They see the need for the power generators to get
20 the natural gas, but they also see the reliance of
21 the natural gas industry on electricity as well,
22 because you couldn't really operate a lot of your

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1 compressor stations --

2 MODERATOR WELSH: Right.

3 MS. MCQUADE: -- without the electricity
4 being there. And I think that at one point in the
5 late '90s, we actually had a blackout because of
6 some of the gas compressor stations not getting
7 the electricity they needed to move the natural
8 gas. So there actually has been some situations
9 where that's happened.

10 NERC has taken a very strong role in
11 this. I think it's important to look at this not
12 just as an operational issue. And I understand
13 the need or want to separate the financial issues
14 from the operational issues, but I don't think you
15 can.

16 If you look at how gas pipelines are
17 built, they're built based on firm service. Firm
18 service requires price signals. Those price
19 signals are financial. So you're not going to get
20 all of the expansions that you might need in
21 infrastructure if you don't have the right
22 financial incentives that were mentioned. And if

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1 you look at financial incentives, that means you
2 actually do need to look at how people buy firm
3 service, and can they actually use firm service.

4 Because, what Kelli said earlier is
5 absolutely correct. There are situations where
6 you can have all the firm service in the world,
7 but in unanticipated demand, with the way the
8 rules are set up, you may not be able to get it.
9 The priorities may have shifted. You may have
10 missed the bumping cycle.

11 So, all of the sudden, while you've paid
12 for firm, you don't actually have the gas you
13 need. So, it's -- you have to look at both sides
14 of this, and realize that they are intertwined.
15 And I think that NERC is doing that. We do that.
16 We think pretty much everybody in the industry
17 realizes they've got to do both of those. It's
18 just that now we have a term for it.

19 MODERATOR WELSH: Right.

20 MS. MCQUADE: And it's called
21 electrification.

22 MODERATOR WELSH: Kelli?

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1 MS. JOSEPH: I think I answered what
2 you're asking, and I mentioned an eastern
3 interconnect planning platform as a big study,
4 fuel refunded study that we're doing. A lot of
5 the ISO's and RTO's in the eastern region are
6 involved in this, and other planning authorities
7 as well. And one of the contingencies that we're
8 looking at -- so this is a big study doing a
9 baseline assessment of all of the gas
10 infrastructure and all of the electric generation
11 currently in the eastern interconnect, looking out
12 five years, ten years, assessing the adequacy of
13 both sectors, you know, going forward, with the
14 anticipated additional gas demand.

15 And then one of the big parts of the
16 study is actually looking at contingencies on both
17 systems. So really understanding how electric
18 system contingencies might impact the gas system,
19 currently and looking forward, and then vice
20 versa.

21 I'm, you know, specifically going
22 through and identifying where there might be

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1 stated locations on my gas pipeline system that
2 are electric dependent.

3 But, you know, I won't speak for the
4 pipelines, but my understanding is that there is a
5 lot of redundancy built in, and the recognition
6 that, you know, you still need to operate the gas
7 system even if there was no kind of an electric
8 system failure. So, I won't speak for them, but
9 that's my understanding.

10 MODERATOR WELSH: Ms. Dahlberg?

11 MS. DAHLBERG: Thank you. As far as
12 this being a new development, I think, in the
13 Pacific Northwest, each integrated electric
14 utility --

15 MODERATOR WELSH: Can you bring the mic
16 up close to your mouth? The court reporter is
17 having a hard time hearing you all.

18 MS. DAHLBERG: Each -- as far as natural
19 gas being a new development, the increasing use of
20 it, each integrated electric utility will
21 determine their needs going forward. There is no
22 central planning commission, if you will, or

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1 planning arm.

2 And, I think there are also, I think, a
3 difference between the Pacific Northwest and say
4 the Midwest is the amount of coal-fired
5 generation. There is only two coal-fired power
6 plants in the Pacific Northwest. They are
7 scheduled for retirement in 2020 and 2025, so this
8 is not a huge opportunity that all of a sudden gas
9 is going to be, you know, a perennial fuel source.
10 Basically for us, I think, how much gas is used
11 year to year largely depends on the hydro year.

12 MODERATOR WELSH: Mr. Holmes?

13 MR. HOLMES: If I understand your
14 question correctly, I'm not sure that I totally
15 do. When you say electrification, are you talking
16 about actually having electric compression on gas
17 pipelines?

18 MODERATOR WELSH: Yes, I think Rae
19 mentioned, you know, the reliance on electrified
20 compressors and transformers --

21 MR. HOLMES: Right.

22 MODERATOR WELSH: -- and other pipeline

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1 equipment that rely on -- they can't produce if
2 the electricity goes out.

3 MS. DAHLBERG: I didn't understand. I
4 didn't answer correctly.

5 MR. HOLMES: And I don't know how much I
6 really have to add to that other than I think as
7 the -- as we put these very large and volatile
8 generation units online, and as we look at the
9 system as a whole to, you know, to all of the
10 changes that are going to occur to it, the gas
11 pipeline system itself, I think Lynn would agree,
12 was basically developed for thermal load over a
13 long period of time, for an LDC-type of load, you
14 know, for heat load in the winter, and in the
15 summer we could inject into storage.

16 The other thing is the load, the thermal
17 loads, don't move nearly as quickly as the
18 generation loads. You're not going to have a cold
19 day in Denver and then, you know, have it minus
20 ten today and 80 degrees tomorrow, or 90 degrees
21 tomorrow. We come close sometimes, but with a big
22 generator, they can literally fall off.

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1 So I think there is the balancing part
2 of that is a big part of the equation, and how we
3 actually power the entire system, I totally agree
4 with you. I mean, we have gas-powered compressors
5 on the pipeline. We have electric compressors
6 now. I think they're more environmentally
7 friendly, so we really need to ensure as this
8 system grows that we take care of it, you know,
9 completely.

10 MODERATOR WELSH: Anybody want to
11 comment on each other's answers?

12 MS. DAHLBERG: The one thing I would
13 like to add now that I better understand the
14 question. One thing that we do in the Pacific
15 Northwest is we get together and we have, I want
16 to say maybe a couple of times a year, and we get
17 all of the electric and all of the gas
18 participants in the room, and we talk about "what
19 if there is a failure," and we actually do a kind
20 of a round table mock emergency, and we say,
21 "let's -- today's scenario is that we don't get
22 any Canadian gas across the border in Washington.

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1 What are we going to do?"

2 And there are parties that can, for
3 example, switch. Maybe they can use their oil
4 backup, and so then other parties in the room can
5 identify and say, "Hmm, on that day, I could
6 actually contract with that party and pay them to
7 use their oil backup so that I can have their gas
8 since I don't have an oil backup."

9 And so we try to encourage that these
10 commercial transactions take place up front, so
11 that when the emergency does occur, you know who
12 to call, who can back off the gas needs, who can
13 provide you, you know, with different commercial
14 alternatives.

15 MODERATOR WELSH: Thank you.

16 So, the Quadrennial Energy Review Task
17 Force is grappling with what should the Federal
18 Government's role be in all of this. It's a topic
19 of high concern. So I'd like for each of you to
20 think about, if you have the ability to give the
21 Task Force one specific recommendation to look at
22 in the issue of gas and electric interdependency,

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1 what would your primary recommendation be?

2 And why don't we switch it up. Mr.

3 Holmes, you start, and we'll come down the

4 opposite direction.

5 MR. HOLMES: This deals with maybe the

6 financial part of this. The one thing that the

7 Government could definitely help with is ensuring

8 that we don't have cross-subsidies, that we ensure

9 the customers coming onto the gas pipelines

10 systems pay their freight because -- well, for

11 obvious reasons. That's one role that they play as

12 a regulator.

13 Another one would be it -- and this is

14 just me talking. I've been to one panel

15 discussion at PERC, and it seemed like panic is

16 too strong of a word, but there is really a lot of

17 anxiety to get something done sooner rather than

18 later.

19 And the one mistake, I think the

20 Government could make is by imposing unilateral

21 solutions across the entire United States, because

22 as some of the panelists have already talked

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1 about, we have individual issues and individual
2 solutions in different regions. And so I think
3 the Government, the Federal Government, needs to
4 be careful that they don't impose a one-size-fits-
5 all that actually ends up making us all less
6 efficient.

7 MODERATOR WELSH: Excellent. Thank you.

8 Mr. Dahlberg (sic)? Ms. Dahlberg,
9 excuse me.

10 MS. DAHLBERG: I guess I would say that
11 regions with an organized electric market that
12 wish to rely on natural gas-fired generation to
13 support electric reliability must find a way to
14 ensure that the electric industry subscribes for
15 firm transportation capacity to ensure timely
16 expansions.

17 So it really is just giving -- I mean,
18 the generators are making rational decisions.
19 They just need to have the incentive to make their
20 product more reliable.

21 MODERATOR WELSH: Ms. Joseph?

22 MS. JOSEPH: One thing I think is

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1 important to recognize that one of the -- so Rae
2 mentioned and others have as well, so the typical
3 way interstate pipelines are financed are through
4 these long-term contracts that typically a local
5 gas distribution company takes out, you know, 20-
6 and 30-year transportation contract on a pipeline,
7 and then one of the interested markets that FERC
8 created years ago where a capacity really funded,
9 and so most of the time the pipelines are built to
10 withstand, you know, a peak winter day, and it's
11 most of the time not a peak winter day, so that
12 would be really underutilized pipelines most of
13 the time.

14 So these capacity release markets help
15 to ensure that the infrastructure on the gas
16 system is used, you know, most of the time. And
17 that's typically what generators are buying.

18 And I think, very interestingly, a lot
19 of producers are starting to finance some of these
20 pipelines. So you're starting to see producers
21 who really want to get the gas out, and want it to
22 be in particular markets. We've seen at least one

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1 mostly producer-funded pipeline in New York, and
2 there's another producer-funded pipeline that's,
3 you know, slated for development.

4 So we are seeing some pipelines built
5 out, not necessarily from the traditional ways
6 that we've seen it in the past.

7 I think it is important to recognize
8 that there are some regional differences, but I
9 also think, you know, really looking at the way
10 that these capacity relief markets have worked,
11 and really looking at the way that traditional
12 financing for interstate pipelines have worked,
13 and sort of, you know, evaluating and looking at
14 how it's worked in the past, where we're at now,
15 and really looking, you know, at some of those
16 mechanism, is really important.

17 MS. MCQUADE: Okay. I'm going to take a
18 slightly tack from everybody else.

19 When we look at how our markets -- how
20 we anticipate our markets changing, we're using
21 more renewables, we're retiring coal, we're
22 depending more on natural gas, not just for

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1 peaking but also for load, for power generation,
2 yet we still also need to meet all of the
3 requirements of the gas users that aren't power
4 generators.

5 The Department of Energy is in a unique
6 position to coordinate all of that so that we
7 could come up with solutions that would be more
8 inclusive. I think we have to stop looking at what
9 is the solution for natural gas, what is the
10 solution for electricity, what is the solution for
11 coal, what is -- we need to look at it overall.
12 And the Department of Energy is in a perfect spot
13 to pull all the SOT's together and encourage them
14 to sit down and come up with some solutions.

15 Because our market is changing. I mean,
16 you can't deny the numbers that Dan said before.
17 And when you tack on what 2015 may look like, it's
18 going to be even more different then.

19 So I can understand the concern that we
20 might be reacting a little too quickly to some of
21 this, but I do think it's important for the
22 country to look at it, and the Department of

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1 Energy is in a perfect spot to do that.

2 MODERATOR WELSH: You know, that brings
3 up a good question, which we've talked about in
4 other QER public meetings, and that is the
5 importance of public- private partnerships.

6 MS. MCQUADE: Yes.

7 MODERATOR WELSH: You all are involved
8 in a plethora of groups and coalitions and
9 organizations, but talking from the Federal
10 Government's perspective, what I hear you saying,
11 Rae, is that there is a convening role for the
12 Federal Government.

13 Talk to me a little more, any of you,
14 about your vision for public-private partnerships
15 in this area of bringing the electric and gas
16 industries closer together and understanding each
17 other better to form solutions that benefit all.
18 Yeah, go ahead.

19 MS. MCQUADE: Well, having just gone
20 through a GEH forum that had more than 300
21 participants in each meeting, we held all of these
22 meetings in a one- month period of time,

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1 basically. We had over 8,000 electronic votes
2 taken on decisions. Most of the people sitting at
3 this panel have cast votes in those decisions.
4 And they led on to each other.

5 I think it's crucial that the federal
6 agencies, and I'm not -- it's -- not looking just
7 at the DOE, but there are a number -- the
8 Department of Interior, a number of different
9 federal agencies, work with trade associations,
10 work with NARUC. They really, really -- NARUC has
11 just a -- in fact, Peggy and I were talking.
12 That's where we run into each other all the time
13 now. NARUC just has an immense ability to pull
14 everybody together, and to have NERC involved in
15 all of this.

16 Then I think you're actually going to
17 start talking the same language. You're going to
18 stop looking at siloed solutions that only may
19 support one company or one segment of the
20 industry, and start looking at it more
21 holistically. And I think you have to do that.

22 MODERATOR WELSH: Terrific.

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1 MS. JOSEPH: So, for those of you who
2 don't know, in ISO New England, there is an
3 effort. The New England governors got together,
4 and they are really looking to think about how
5 they can encourage additional infrastructure
6 build-out on the gas system, and really link that
7 to the electric system.

8 So that's an ongoing effort. They are
9 really looking at, you know, the role that the ISO
10 can play, and ensuring and making, you know,
11 purchasing capacity on the transportation
12 pipeline, and making sure that adequate
13 infrastructure exists. So there's one example
14 that's an ongoing effort, and, you know, I don't -
15 - I can't tell you exactly what's happening there,
16 but it's very interesting.

17 MODERATOR WELSH: Anybody else?

18 Okay, well, I'm going to take the
19 privilege of changing topics, and want to solicit
20 your advice and counsel on gas storage and
21 efficiency. We have not talked about gas storage
22 and efficiency efforts can provide more natural

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1 gas, and may, in fact, eliminate the need for new
2 pipelines. May or may not. You may have comments
3 on that.

4 So can we talk a little about that, and
5 how efforts are going forward with gas storage and
6 efficiency, and the impact there on the electric
7 system and the coordination between the two?

8 Kelli, you want to start?

9 MS. JOSEPH: Sure. So, I -- one of the
10 things that I mentioned earlier, I think, that
11 there is a role for thinking about how we can
12 better utilize gas storage and thinking about
13 potentially developing markets around storage and
14 making that more accessible.

15 You know, my understanding of how it
16 works is most of what's in storage is, again, for
17 local gas distribution companies. You know,
18 perhaps others who also buy some storage space on
19 the pipeline. And, you know, generators, some
20 have access to it and some do not. It really, I
21 think, sometimes depends on their marketer. So if
22 their marketer is working with a local gas

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1 distribution company that has storage in their
2 region, then that's something that's available to
3 them. That's, as many of you know, a challenge in
4 New England. There is no gas storage in New
5 England, and that's part of the challenge.

6 I think one of the interesting things
7 that came out, actually, through the NAESB
8 process, was a discussion on, you know, this no-
9 notice firm and utilizing storage in that way.

10 And one of the very interesting things
11 that came out was that it's not necessarily
12 another, you know, valid safe solution because
13 even if you have -- you do have that kind of
14 transportation, (1) you need storage. You need to
15 actually have storage in your region to take
16 advantage of that. And then (2) you still, if you
17 take gas out, you still need to be able to put gas
18 back into the pipeline. So again, it's
19 scheduling, timing, differences matter, and how
20 often you can actually schedule and nominate on
21 the pipeline also play a role.

22 So again, I think there is a role to

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1 look at how we can better utilize gas storage,
2 and, you know, thinking about how generators might
3 be able to use that.

4 MODERATOR WELSH: Mr. Holmes or Ms.
5 Dahlberg?

6 MS. DAHLBERG: Kelli is right in that
7 the majority of the storage, at least on Northwest
8 Pipeline, is contracted for under long-term
9 storage agreements.

10 However, Northwest Pipeline does have
11 two billion cubic feet a day of storage that it
12 utilizes for balancing. So we put that into our
13 rates, and all of our customers, whether they
14 utilize it or not, pay, and it's less than a half
15 a cent, in fact it's a very, very small portion of
16 our rate, but we use it for balancing. And, you
17 know, I think pipelines could work in different
18 regions and hold different amounts of capacity for
19 balancing. It's basically what the shippers are
20 willing to pay. So there are some creative
21 alternatives out there for storage.

22 And as far as efficiency, if I'm

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1 understanding that question correctly, our
2 Northwest Pipeline, our market in 2008, because of
3 the recession, we lost a lot of market's demand,
4 but we also started really seeing a lot of the
5 effects of efficiency of, you know, the
6 lightbulbs, the -- everything, I think. And so we
7 are just now catching up to market demand from
8 2008. So we have not been growing. We've just --
9 gradually have been keeping steady.

10 MODERATOR WELSH: Mr. Holmes, any
11 comments on storage and efficiency?

12 MR. HOLMES: Just quickly. You know,
13 clearly storage is going to be an important part
14 of the solution for gas-electric interdependency.
15 There is -- and it is really interesting to think
16 about the different ways that that might happen.
17 I was thinking the other day, and Lynn may tell me
18 that this won't work, but what I did maybe, if you
19 actually have firm storage available, as an end
20 user, say as a power plant, I think maybe you
21 could work out a separate scheduling cycle for
22 that.

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1 If there was certainty on the pipeline
2 that you had receipt of gas, and there was
3 certainty on the pipeline that you had delivery of
4 gas on the other side, I think the pipeline would
5 be more comfortable than having -- I mean, you
6 could -- and I'll just say this, maybe you could
7 have an hourly nomination cycle of some kind, if
8 there was certainty on both sides.

9 And if there was certainty, you know,
10 maybe there could be higher penalties if for some
11 reason what was supposed to happen didn't happen,
12 but, I -- another route, which is also expensive,
13 as LNG heating units, but you can get a lot of gas
14 out of those units, but you can't gasify it or
15 liquefy it very quickly, so they're kind of like a
16 one-way storage, but, again, that, as a supplement
17 to other resources on the pipeline could be really
18 helpful.

19 I think there's a lot of good creative
20 discussion to have around that.

21 MS. DAHLBERG: Uh-huh. No, I agree with
22 Joe. And basically, on our pipeline, because

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1 storage is such a certainty, gas generators can
2 call our gas control 24 hours a day and say, "I'm
3 going to come on. I'm going take some supply."
4 And we don't require a nomination cycle. We just
5 say, "Fix it in the next cycle." So, yes, we do
6 that.

7 MODERATOR WELSH: So we've talked a lot
8 about scheduling, and standards, and the FERC
9 NOPR. What other operational -- and I'll throw in
10 financial, since you raised it -- issues does this
11 emerging interdependency bring up, and do you have
12 any -- beyond scheduling and nominations and those
13 things, are there some other operational solutions
14 that this task force should be thinking about and
15 considering?

16 Ms. Dahlberg, do you want to take that
17 first shot?

18 MS. DAHLBERG: I know -- I think I
19 probably stand by my answer about creating the
20 economic incentives for, you know, like Joe said,
21 the rate payers are going to pay in the end for
22 the electricity reliability. How do we get those

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1 costs attributed to them? Who is going to pay? I
2 think fixing that is the single biggest fix.

3 MODERATOR WELSH: And not a small issue,
4 who is going to pay.

5 MS. DAHLBERG: No, it never is.

6 MODERATOR WELSH: Anybody else?

7 MR. HOLMES: I'll comment. Would you
8 like to --

9 MS. JOSEPH: You go ahead.

10 MR. HOLMES: So we go with this on the
11 trading floor every day. We live in different
12 worlds, gas and electric, and it's something that
13 could use some improvement today, even without the
14 onslaught of big power generators.

15 So in Colorado, we're on Mountain Time,
16 the gas day starts at 8:00 a.m. here. The
17 electric day starts at midnight. And so, for
18 example, if we're surplus power capacity -- and
19 I'll try not to get too far in the weeds, but just
20 so you can feel our pain a little bit -- when we
21 buy gas for a 24/7 sale by our -- for fuel for our
22 gas generators so that they can make an electric

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1 sale, we buy gas today starting for 8:00 a.m.
2 tomorrow, when their sale may start at midnight
3 tonight.

4 And not only that, but just pre-
5 scheduled through the weekend, for example, we buy
6 gas -- natural gas today for tomorrow, every day,
7 except on Friday, we buy gas for delivery on
8 Saturday, Sunday, and Monday.

9 In the electric world, they schedule --
10 pre-schedule power on Thursday for Friday and
11 Saturday, and on Friday for Sunday and Monday.
12 And the gas market doesn't trade that way.

13 So, we are constantly looking for ways
14 to manage our storage efficiently and things like
15 that to make all that sync up.

16 I -- you know, you bring up the
17 scheduling. Whatever we come away with at the end
18 of this long integration process, I hope that we
19 have some scheduling that really makes sense on
20 both sides. I really think there are
21 inefficiencies built into the system. I can tell
22 you, if we try to buy gas on Sunday, it's very

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1 expensive because the producer representative
2 already sold that gas Friday, and he's gone. And
3 so they're not going to wait around for us. So I
4 think there are some really inefficiencies in the
5 system that we could smooth out right now.

6 Thank you.

7 MODERATOR WELSH: Thank you.

8 One final question. I want to give each
9 of you a chance to give some thoughts and
10 recommendations to the task force based on these
11 issues. Any final thoughts? We have the White
12 House and several other important people in the
13 room, and we'll take your comments back, so I want
14 to give you a chance for some final comments to
15 the task force.

16 Who wants to start? Rae?

17 MS. MCQUADE: I don't mind.

18 MODERATOR WELSH: You're next to me.

19 MS. MCQUADE: Thank you. Well, I do
20 think that -- while I do think that scheduling is
21 a critical issue for the recognition that the gas
22 and electric markets need to be better harmonized

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1 than they are now, that cannot be an only issue to
2 be addressed.

3 I think that Lynn's remarks about the
4 need for infrastructure and the need to have the
5 proper incentives to show where infrastructure is
6 needed is crucial, but these are all intertwined.
7 You can't pick one apart from the other, which I
8 think is an important recognition that everyone
9 should make, and that everybody has to be involved
10 in this. That it has to include the states, the
11 munis, the co-ops, the trade associations, the
12 pipelines, the intrastate pipelines which we
13 haven't talked about much, and are also equally
14 critical to getting gas to where it's supposed to
15 go.

16 When you look at these issues, they're
17 not simple, and it's going to take -- I hate to
18 say it takes a village, but I think it's going to
19 take a village to figure out the best way to move
20 forward.

21 MODERATOR WELSH: Thank you.

22 MS. JOSEPH: Let's see if I can

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1 summarize --

2 MODERATOR WELSH: And can you pull close
3 to the mic?

4 MS. JOSEPH: I'll see if I can summarize
5 three major concerns, or three major issues.

6 I think one of the things that's really
7 important to recognize, as Rae just mentioned, is
8 that -- and I started out saying this, but there
9 are essentially two kinds of generators. There
10 are those that are directly connected to an
11 interstate pipeline, which is FERC's jurisdiction,
12 and then there are those that are located behind a
13 gas LVC or an intrastate pipeline, which are
14 state-regulated. So I think right there the, you
15 know, big issue there.

16 Secondly, I think, you know, some of
17 these issues related to market finding, the
18 scheduling differences, the operating day
19 differences, these aren't just, you know, small
20 concerns. These are -- these tend to be big
21 concerns, because generators have difficult end-
22 day nominating gas outside of typical scheduling

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1 times that are set on the pipelines, or generators
2 are looking to purchase and nominate gas over
3 multiple days that can be a challenge.

4 And then thirdly, I don't know who can
5 help with this, but, you know, one of the big
6 concerns, is thinking through how liquid the gas
7 markets are and what we can do to further
8 encourage liquidity there, because generators are
9 typically purchasing through marketers. There is
10 an exchange that is set up. That exchange is
11 really Monday through Friday, and outside of those
12 hours, generators are relying on whoever they know
13 and how much, you know, their marketer has access
14 to gas.

15 And, you know, if the scheduling times
16 on different pipelines are different, then if a
17 marketer does have gas and get it to a generator,
18 if the two pipelines don't have the same
19 nominating schedules, then maybe that gas can't
20 flow.

21 You know, there's a lot of challenges
22 thinking through how we can make these markets

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1 more liquid, more transparent so that we
2 understand, you know, who is buying gas, where
3 they are buying gas, and how easy it is to flow
4 that gas. Even though you can nominate gas every
5 day, purchasing can still be a challenge.

6 MODERATOR WELSH: Thank you.

7 MS. DAHLBERG: Yes, I would like to say
8 that --

9 MODERATOR WELSH: Close to the mic,
10 please.

11 MS. DAHLBERG: Sorry. I would like to
12 say that this is a collaborative effort, and I
13 think, you know, Kelli and I might disagree about
14 whether 4:00 a.m. is better or 9:00 a.m. is
15 better, but in the end, it has to work for
16 everyone. And I think that, again, the incentives
17 are the number one thing that needs to be
18 accomplished. I guess I'll just have to stand on
19 that. I think that's the number one thing.

20 I think spending time on the gas day. I
21 realize, you know, there are problems, that can be
22 addressed in the East with a 4:00 a.m. gas day,

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1 but it doesn't work in all parts of the country.
2 It's not an improvement there. I think that's
3 probably all I would like to say.

4 MODERATOR WELSH: Thank you.

5 Mr. Holmes, final word?

6 MR. HOLMES: A couple of things.

7 I think Kelli mentioned something that
8 we hadn't talked a lot about that is really
9 important. And that is the commodity gas market
10 following along with whatever these scheduling
11 changes are and operating changes are. And that's
12 a market that will follow the money.

13 And I know in our trading floor we've
14 talked a little bit about moving the first timely
15 cycle from 10:30 in the morning deadline to a 1:00
16 p.m. deadline, which is probably going to happen,
17 and we're wondering if gas is going to be held off
18 the market because they -- you know, there could
19 be a difference in the demand over that period.

20 And so it's going to cause us some new
21 dynamics. And so that was a really good point, I
22 thought, that she made, too. That needs to be --

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1 we need to start talking about that.

2 The other thing I'll just say quickly,
3 too. In just looking at equity in costs and
4 operations. I can tell you, Colorado Springs is a
5 member of the American Public Gas Association, so
6 -- but, for us, right now, the gas day starts at
7 8:00 a.m., in the morning, Mountain Time, so
8 that's -- you know, 6:00 to 9:00 is about our peak
9 load, and so we're right in the middle of our peak
10 load when the gas day starts.

11 So we buy gas today -- we would like to
12 buy gas today for tomorrow's peak load, but we
13 really end up buying it -- some for tomorrow's
14 load, and some for the next day's load. And so
15 it's not as efficient.

16 If we move the gas day up to start
17 actually forward of our peak, then we could buy
18 gas today for tomorrow. And we get a forecast of
19 what that would be every day at 6:00 a.m. And it
20 can get pretty cold here. And it can get pretty
21 cold pretty quickly here. And so it's really
22 helpful to us to have that extra time.

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1 With that said, I would say the majority
2 of the APGA members that I've talked to find it a
3 hardship to move that gas day from 9:00 a.m.
4 Central. A lot of them are on Eastern Time zone,
5 and they come in at 6:00, 7:00 in the morning, and
6 their gas day starts at 10:00. And so they're
7 able to work with their natural gas pipeline to
8 reconcile their balances prior to the start of the
9 next gas day, and that saves them imbalance
10 penalties on the pipe. And they really don't want
11 to move that because they'll be facing -- that gas
12 day start, because they'll be facing penalties.

13 So, if we change it, then we've got --
14 we have to look at the impact on them and how
15 that's going to be managed. In fact, they said if
16 you're going to -- don't do -- don't start the gas
17 day at 3:00 a.m. Eastern Time. If you're going to
18 move it that far back, move it to midnight.
19 Because they're going to have to try to get people
20 in at 2:00 in the morning, or 1:00 in the morning,
21 to start their day, and try to balance with the
22 pipeline.

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1 And so, I don't know if that problem
2 doesn't have a solution, but we can't just let
3 people -- and there will be a lot of examples of
4 the same thing. We just need to remember to take
5 all of those issues into account when we develop
6 this new gas day and new scheduling regimen.

7 Thank you.

8 MODERATOR WELSH: Wow. We have learned
9 so much this morning from all of you. I want to
10 thank you on behalf of the Department of Energy
11 and the QER Task Force. This has been truly
12 informative. We hope you all are going to file
13 comments on behalf of the organizations that you
14 represent today. And please join me in giving
15 these stellar speakers a round of applause.

16 (Applause.)

17 MODERATOR WELSH: Thank you all.

18 Now, we'll take a minute to set up for
19 Panel 2. While we're doing that, let me remind
20 you of two addresses that you must write down.
21 The QER address is www.energy.gov/QER. All of the
22 speakers' presentations and other very good

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1 information regarding this meeting are on the
2 website, and you can find it under today's
3 meeting.

4 Also, we encourage all of you to file
5 written comments, and that address is
6 QERComments@hq.doe.gov.

7 (Pause in proceedings.)

8 MODERATOR WELSH: Okay. Will everyone
9 please take their seat?

10 Let me remind everyone watching and
11 attending that the panelists' views are their own,
12 and not of the Department of Energy's and the
13 White House.

14 Before I introduce the panel, I wanted
15 to recognize a dignitary in the room, but he just
16 walked out. Mark Gabriel, the director of the
17 Western Area Power Administration, is here.

18 Mark, do you want to give us a wave?
19 Thank you for joining. We appreciate it. Thank
20 you. Karen apologizes for not recognizing you
21 sooner.

22 Let me turn to our distinguished

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1 panelists now. The title of this panel is
2 "Infrastructure Needs Through 2013." So our first
3 panel talked about the coordination needs of the
4 two industries. We're now going to talk about the
5 infrastructure needs.

6 To my left is David Eves, President and
7 CEO, Public Service Company of Colorado.

8 To his left is Curtis Moffatt, Deputy
9 General Counsel and Vice-President for Gas, for
10 Kinder Morgan.

11 Clifton Karnei, Executive Vice-President
12 and General Manager, Brazos Electric Cooperative.

13 And Beth Musich, Director, Energy
14 Markets and Capacity Products, Southern California
15 Gas Company and San Diego Gas and Electric
16 Company, on behalf of the Western Gas-Electric
17 Regional Assessment Task Force.

18 And finally, Arne Olson, Partner, Energy
19 and Environmental Economics, on behalf of the
20 Western Natural Gas-Electric Interdependency
21 Study.

22 So, with that, I want to welcome you

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1 all.

2 And, Mr. Eves, the floor is yours.

3 Remember that you have five minutes, and the time
4 clock is to your right.

5 Thank you.

6 MR. EVES: Thank you, Peggy.

7 I would like to join Commissioner Patton
8 in welcoming you all to Colorado. I was going to
9 tell you that the weather is always like this, but
10 she -- I can no longer do that. She already said
11 winter is coming, so...

12 I appreciate and my company appreciates
13 very much the opportunity to participate in this
14 QER meeting and to provide input to the Department
15 of Energy.

16 We're an investor-owned integrated
17 electric and natural gas utility serving eight
18 states, including Colorado, which is where I work.
19 We're the sixth largest natural gas LVC in the
20 country, and here in Colorado we serve about 1.3
21 million customers through Public Service Company
22 of Colorado.

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1 In the electric side of our business, we
2 have a very strong track record of emissions
3 reductions by incorporating very significant
4 amounts of renewable energy, energy efficiency,
5 emission controls, coal plant conversions.

6 We've been the number one wind energy
7 utility in the country for the last decade. I
8 think we're one of the five strongest utilities
9 for energy efficiency, and in the top ten for
10 solar, and have had a number of industry-leading
11 and, at the time, quite controversial -- we talked
12 about clean air, clean jobs. Commissioner Patton
13 mentioned that earlier -- but coal plant
14 conversion, emission control projects. So the
15 world is changing a lot around us, and we're
16 helping make that change.

17 Natural gas is an extremely important
18 part of our strategy to reduce emissions, and the
19 low current stable prices of natural gas and a
20 good forward curve are critical to doing that on a
21 going forward basis.

22 I think in our gas business, and we

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1 operate a large LVC, but also it includes about
2 2400 miles of high-pressure pipeline, we're very
3 focused on, first and foremost, in a long term
4 context, in improving the safety and the
5 reliability of our system. And with that -- to do
6 that, there's a tremendous amount of renewals and
7 expansions and replacement of older pipe types,
8 but what comes with that is a significant amount
9 of environmental benefit and additional
10 flexibility to serve the needs of the electric
11 industry.

12 The replacement of old pipe types --
13 we've just gotten all of our cast iron out of the
14 ground -- but replacing those, installing 24-inch
15 lines or 16- inch lines where we used to have
16 eight- or 12-inch lines, provides the line pack
17 and the flexibility that can work with our
18 storage, whether it's our storage that we own and
19 operate, or whether it's upstream on pipeline
20 suppliers, like next to me here. All of those
21 things have to come together and be planned in
22 order to meet a new world.

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1 I'm going to save some of my prepared
2 comments for later, but hopefully you'll ask me a
3 question that fits those, but I will say this:
4 working in electric and gas planning about a
5 decade ago, and setting up our first trading
6 operations, I find that with the high level of
7 renewable energy integration, I think it was
8 mentioned that we had 60 percent of our energy on
9 a Colorado day. It was in the middle of the night
10 at a low load time, but 60 percent of our energy
11 came from wind.

12 The old world of being able to plan for
13 the design day, on a gas system, and to be able to
14 think about the line pack they can build up
15 through the day and what time of the day the
16 system peak is early in the morning, we have a
17 whole new set of demands that we're facing, and to
18 have almost 2,000 megawatts of combined cycle
19 generation operating at wildly different levels
20 throughout the day depending on 2200 megawatts of
21 wind generation and the 400 megawatts of solar
22 that's either on or coming, those things -- and

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1 this is in a self-contained balancing area for an
2 electric system that's not part of the larger
3 footprint of an independent system operator where
4 these operating requirements can be spread across
5 a hundred thousand megawatt footprint. Instead,
6 we're doing it on a 7,000.

7 But we have to design and plan the
8 system completely differently, and be in a
9 position to be able to have the assets in place so
10 that the panel that was just up here can operate
11 that system and meet our customers' needs. So I
12 look forward to taking questions and being part of
13 the discussion.

14 MODERATOR WELSH: Thank you.

15 Mr. Moffatt?

16 MR. MOFFATT: Thank you, Peggy.

17 I'm here today representing not only
18 Kinder Morgan, but also the Interstate Natural Gas
19 Association of America. We operate over 200,000
20 miles of interstate pipeline. My company, Kinder
21 Morgan, operates about 70,000 miles of natural
22 gas-related pipeline. We serve in every region of

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1 the country. Some of our pipelines include Natural
2 Gas Pipeline of America, Tennessee Pipeline,
3 Southern Natural Gas El Paso, Colorado Interstate
4 Gas, Ruby into the Northwest.

5 So, we cover all of the regions. We're
6 operating in bilateral markets as well as RTO's.

7 I've been asked to come and speak
8 primarily about the infrastructure needs through
9 2030. In the record, we placed the most recent
10 eco-foundation study on infrastructure needs
11 through 2035. Dan quoted some of the statistics
12 from that this morning.

13 Let me just put it in context for you.
14 Between 2003 and 2013, the industry built 12,400
15 miles of new pipeline infrastructure. We spent
16 about \$5 billion per year, and we added 86.7 bcf
17 per day of capacity.

18 By 2035, natural gas midstream, we
19 estimate, will require onshore \$270 billion, and
20 another \$43.7 billion of infrastructure to support
21 LNG. We average \$14.2 billion per year through
22 2035.

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1 As far as the size of the mains, our 16-
2 inch adds in 2014 to 2020, we estimate will be
3 another 7,500 miles, and 16-inch from 2014 to 2025
4 will total 12,000; that's inclusive of the prior
5 7500. And by 2035, we'll need to add 20,300
6 miles.

7 The question is: can the industry keep
8 up? Yes, I think our record demonstrates that we
9 can keep up. I started in this industry back when
10 we bought up over a penny per quarter increase at
11 the well at natural gas price. I'm dating myself;
12 I was in kindergarten at the time.

13 MODERATOR WELSH: No, you weren't,
14 because I knew you then.

15 MR. MOFFATT: But we've seen a lot of
16 change since then, and primarily the desegregation
17 of the commodity from the transport capacity and
18 storage capacity.

19 I thought it was interesting this
20 morning that many of the discussions really
21 devolved to where are the sellers of natural gas.
22 Not the pipelines. We're there. Where are the

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1 sellers of natural gas over the weekend? If they
2 want to make money, why aren't they there?

3 But anyway. We do raise our capital in
4 the capital markets. We're efficient doing it, as
5 Lynn said, with long-term contracts. It's a model
6 that's been there for decades, and it's worked
7 reasonably well.

8 Unfortunately, we're not an industry
9 that can build it and ask if they will come. We
10 have a combination of demand that is behind the
11 natural gas project. We then have to go to the
12 FERC and we have to get a determination that it's
13 needed. We cannot go to the FERC and obtain the
14 certificates to construct and operate our
15 pipelines if we don't have signed-up demand. It's
16 a rock bottom issue. It's not just finances; it's
17 the law.

18 We also, however, feel that we can
19 modify our services. I think you've seen that
20 since the 1980's that a lot of new services as
21 market demanded it. With infrastructure comes the
22 ability to provide additional amounts of storage

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1 capacity, for example. Line pack services;
2 additional balancing services; pipelines that have
3 additional line pack and large facilities to
4 operate are often more comfortable with various
5 types of balancing services than non-ratable will
6 take, so that we can offer those services.

7 At bottom, though, I think we have to
8 understand two major things. One, the natural gas
9 pipeline industry serves multiple types of
10 customers. We have the local distribution
11 customers; we have commercial; we have industrial;
12 and now we have an increasing demand in some
13 markets for electricity.

14 We are under the Natural Gas Act,
15 required to provide services on a not unduly
16 discriminatory basis, so when we're discussing new
17 ideas and new services for the electric market,
18 the pipelines go to the FERC to try to modify our
19 tariffs, and we often have to battle with the
20 other customers for cost allocation, undue
21 preference. Even when we're trying to do the
22 communication and overhead first, and Pam

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1 Silverberg is in the audience, and she has a big
2 role for that at FERC, we had to deal with and
3 demonstrate that it was not unduly discriminatory
4 to allow operators to talk to each other. But it
5 took us, I think, about 18 months to convince the
6 public and the FERC to permit that rule to go
7 forward.

8 The other major, major point that I
9 would like to make, is do we have tremendous
10 development risk on our pipelines, which I'll get
11 into in question and answer, I hope.

12 MODERATOR WELSH: Thank you.

13 Mr. Karnei?

14 MR. KARNEI: Thank you.

15 MODERATOR WELSH: Karnei, excuse me.

16 MR. KARNEI: Close enough.

17 Brazos is the oldest and largest
18 generation and transmission cooperative in the
19 State of Texas. We own and operate over 2,000
20 megawatts of gas-powered generation. We are a
21 very active participant in the Texas-ERCOT market,
22 and I also serve on the board of the ISO. I serve

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1 on the ERCOT board of directors.

2 We're a large transmission provider at
3 ERCOT. We have over 2600 miles of transmission
4 line. We provide wholesale power to 16 electric
5 cooperatives.

6 MODERATOR WELSH: Can you pull the mic
7 closer to yourself?

8 MR. KARNEI: Yeah, thank you.

9 In 68 counties in north and central
10 Texas, and serving a little north of Houston, and
11 around the Dallas-Fort Worth area.

12 Brazos's mission is to provide reliable
13 and affordable electric power to our member
14 cooperatives. This affordability issue is very
15 important to us because in rural areas, a
16 disproportionate number of our member consumers
17 are below the poverty level.

18 We are very accountable to our member
19 owners since they own the organization.

20 Brazos, as well as ERCOT, is very
21 dependent on the natural gas industry for
22 generating power. We have firm and interruptible

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1 transportation agreements with multiple major
2 intrastate pipelines. We also have storage
3 contracts to accommodate swings in our delivery so
4 we can match up our generation needs with our gas
5 delivery.

6 During this past winter, we experienced
7 significant problems with natural gas deliveries
8 to our power plants. Most of these problems
9 occurred during the coldest days of this past
10 winter. On 25 days, the gas pipelines limited our
11 hourly deliveries to no greater than our nominated
12 supply for a 24-hour period, and ratable gas flows
13 do not allow you to increase or decrease your
14 generation output in response to electric load on
15 the grid.

16 Let me give you a specific Brazos
17 example. We have two peaking combustion turbines
18 at our Miller plant. ERCOT called on these for
19 many of the days for a four-hour period in the
20 morning to run. Unfortunately, we were required to
21 take ratable gas for the full 24 hours, and that
22 effectively precluded us from running those units.

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1 So in order to maintain a reliable grid
2 in the future, it's going to be important to have
3 an adequate amount of online capability,
4 generation capability, that can ramp up and down
5 in real time, and the current pipeline model of
6 ratable flow for a 24-hour period poses big risks
7 and operating challenges that precludes electric
8 generating units attempting to ramp up and down.

9 As the natural power grid moves forward
10 into a world with significant coal retirements and
11 higher concentration of intermittent renewable
12 resources, like wind and solar, being able to ramp
13 natural gas plants up and down is going to be even
14 more important.

15 In my estimation, given the severe
16 constraints that we experienced this last winter,
17 we're not going to have the flexibility we need.

18 So what do we need? In my opinion, we
19 need three things. We need to fix what we can.
20 We need to grab the low-hanging fruit. And the
21 first thing that I would like to see us do is get
22 the FERC NOPR passed with a 4:00 a.m. start to the

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1 gas day.

2 The second thing is, in an ideal world,
3 we would have an hourly gas market to support an
4 hourly electric market, but I don't see that
5 happening any time soon, so we need to start
6 looking at a bunch of new services for the
7 electric grid such as no-notice service, and
8 especially being able to accommodate non- ratable
9 flows.

10 And the third item we need is we need
11 more capacity. We need more pipeline, and we need
12 more storage. It will be of paramount importance
13 to us as we move forward that in order to continue
14 to have a reliable grid that we be able to have
15 the natural gas industry provide this kind of
16 operational flexibility.

17 On behalf of Brazos and rural electric
18 cooperatives, we urge the Department of Energy to
19 weigh in on this critical reliability issue, and
20 we thank you for the opportunity to share some
21 comments from the electric cooperative sector.

22 MODERATOR WELSH: Thank you.

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1 Ms. Musich?

2 MS. MUSICH: Yes, thank you. Musich.

3 MODERATOR WELSH: Sorry.

4 MS. MUSICH: That's okay.

5 So, Southern California Gas Company is
6 the largest LVC in the country. Our customers use
7 about one pcf of gas per year. We -- so, SoCalGas
8 and San Diego Gas & Electric own and operate an
9 integrated gas transmission system consisting of
10 pipeline and storage facilities.

11 With our network of transmission
12 pipelines in four interconnected storage fields,
13 SoCalGas and SDG&E delivery natural gas to over
14 six million residential and business customer
15 meters.

16 The SoCal and SDG&E system complies with
17 the California Public Utility Commission's
18 mandated design standards for core and non-core
19 service. Our system is designed to provide
20 continuous service to core customers; that's our
21 small -- our residential and our small commercial
22 industrial customers. And the design standard for

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1 that is one in 35 year peak days.

2 We are also designed to provide
3 continuous larger, non-core customers such as
4 electric generators, through a one in ten cold
5 day.

6 Both of these days are expected to occur
7 during the winter heating season when our core
8 usage is at its greatest.

9 The electric generation market in
10 southern California is a very important customer
11 segment to SoCalGas and SDG&E. We are very proud
12 of our service record to this market, and have
13 recently proposed several procedural and
14 infrastructure changes which will improve upon
15 that record.

16 The SoCal and SDG&E system has the
17 capacity to serve six billion cubic feet per day
18 of customer demand through a combination of
19 pipeline supplies and storage withdrawal.

20 The pipeline network is highly
21 interconnected, which allows us to remove
22 pipelines from service for inspection or repair

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1 without severely impacting our operations or
2 service to our customers.

3 However, our system's ability to provide
4 these flexibilities to our customers is not
5 unlimited. Several levels of pipeline supply --
6 some level of pipeline supply is always needed on
7 our system; we can't serve it just from our
8 storage facilities even though we have very
9 substantial storage assets.

10 We have seen periods of low delivery
11 storage system happen more frequently, such as
12 during the recent cold weather events in the
13 eastern part of the country, when supplies were
14 economically diverted to that area. To remedy
15 that, SoCalGas and SDG&E have proposed changes to
16 our customer balancing service such that customers
17 are incentivized to manage the difference between
18 their usage and supply during times where our
19 system is stressed.

20 We also require a minimum level of
21 pipeline supply be delivered to our southern
22 pipeline system, which runs through Riverside

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1 County and serves San Diego and Los Angeles. This
2 is an area of our transmission system that has
3 seen dramatic growth in new electric generation
4 plants, but it's not as well integrated with the
5 rest of our system, and we have very limited
6 ability to supply the southern system with gas
7 delivered in other areas.

8 Compounding the challenge is the fact
9 that SoCalGas and SDG&E offer to the customers a
10 multitude of choices for their gas supply, and for
11 economic reasons, customers generally choose to
12 utilize the other supply sources to meet their
13 demand rather than deliver gas supply on the
14 southern system. This places SoCalGas and SDG&E
15 in the position of trying to acquire those
16 supplies on the market, or curtailing customer
17 demand if we're not successful.

18 To rectify this, SoCalGas and SDG&E have
19 proposed construction of a new pipeline that
20 better integrates our southern system with the
21 rest of our gas network, and will allow us to move
22 gas supplies to our southern system. This

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1 pipeline represents a significant undertaking in
2 terms of scope, cost, and construction, and we've
3 only just begun the regulatory process.

4 In southern California, local electric
5 generation is primarily fueled by natural gas.
6 SoCalGas and SDG&E serve plants totaling 20,000
7 megawatts generating capacity. The use of fuel
8 oil is not permitted by the Air Quality Management
9 District here, even for backup purposes. And with
10 the advent of a significant percentage of
11 renewable energy sources installed, the electric
12 utilities have begun to deploy quick-start
13 electric generating facilities throughout our
14 service territory to compensate -- and to
15 compensate for these sudden changes in the
16 renewable sources.

17 This means that several hundred
18 megawatts of natural gas-fueled electric
19 generation can go from an offline state to a
20 hundred percent utilization in as little as seven
21 minutes. This sudden and dramatic change in gas
22 use on our system can create a severe drop in a

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1 pipeline's operating pressure, threatening the
2 integrity of our system and service to our
3 customers.

4 To date we have not found a facility-
5 based solution, such as additional pipelines, to
6 fix this issue. However, SoCalGas and SDG&E have
7 initiated discussions with plant operators,
8 electric utilities, and the CISO Cal ISO regarding
9 this challenge, and have committed to improving
10 already-good communication with these parties in
11 order to avoid pipeline issues while providing
12 service to these quick-start facilities. We
13 continue to evaluate the situation and seek other
14 solutions.

15 Thank you.

16 MODERATOR WELSH: Mr. Olson?

17 MR. OLSON: Thank you. And thank you
18 for the -- is this mic on?

19 Thank you for the honor of inviting me
20 to come and speak to this group.

21 My name is Arne Olson; I'm a partner
22 with Energy and Environmental Economics. I think

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1 my role here is going to be a little bit different
2 than some of the other roles. I'm not
3 representing a specific group, but I'm a
4 consultant, and I'm going to talk about some of
5 the work that we've been involved with recently.
6 And I'm going to do this with slides as well.

7 So we are just in the process of
8 wrapping up our Western Gas Infrastructure Study
9 that was sponsored by the Western Interstate
10 Energy Board. We had Phase 1 where we looked at
11 questions of whether there will be adequate
12 natural gas infrastructure in the West and looking
13 out ten or so years in the future.

14 And our main question there in short is:
15 can some of the issues that happened in the
16 Northeast, in New England in particular, and New
17 York and (inaudible) area -- is the West
18 vulnerable to some of those same supply
19 disruptions and natural gas infrastructure
20 adequacy issues that caused challenges to the
21 electric sector in those areas.

22 And then Phase 2, you know, then, of

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1 course, of large interest in the West, increasing
2 the penetration of wind and solar, very renewable
3 resources, that creates a need for flexible
4 natural gas generation that's sporadic, so will
5 the western natural gas infrastructure have enough
6 flexibility, both physically and are the market
7 arrangements and institutions flexible enough or
8 will we need to introduce new products and those
9 kinds of things to manage those flexibility needs.

10 Next slide please.

11 I want to recognize a number of people
12 in the room today who contributed to the study.
13 Of course, it was sponsored by the Western
14 Interstate Energy Board, a group of western states
15 and provinces. Funded generously by the DOE. And
16 we were assisted by a technical advisory group
17 consisting of Beth Musich, and Kinder Morgan, and
18 Mike Jenkins from APS, and Alaine Ginocchio and
19 the other Wheaton staff, and the study wouldn't
20 have been the same without the generous
21 contributions from -- and I should mention
22 Northwest Pipeline, as well -- from all the

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1 pipeline companies and all of the members of the
2 tag.

3 And the Phase 1 report was released on
4 March 17th. Our Phase 2 executive summary is
5 being released today, and our full report will be
6 released on Wednesday.

7 Next slide, please.

8 So in our study we considered a number
9 of different scenarios, with the intent of
10 stressing the natural gas infrastructure in the
11 West in ways that it's not stressed today to see
12 if it can respond adequately to those. Of course,
13 every study has to have a base gauge, so ours
14 looks at kind of current trends out through 2024.

15 We have a high coal retirements case
16 where we retired 50 percent of the remaining coal
17 resources in the region that were -- over and
18 above the ones that are already scheduled to be
19 retired. So today we have 40 gigawatts of coal in
20 the West. Our scenario had 16 gigawatts of coal
21 in 2024.

22 We looked at a high renewables case

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1 where we would end up with 27 percent of renewable
2 portfolio standard effectively throughout the
3 West. And we looked at sensitivities on exports
4 both to Mexico and LNG exports out of the Pacific
5 Northwest.

6 Next slide, please.

7 Our key findings in Phase 1 are that the
8 western natural gas infrastructure will, largely,
9 be adequate to meet the needs of the electric
10 sector, except under the most extreme winter
11 weather conditions.

12 Now, all our regions are linked, and the
13 West is a very broad area. This isn't a study of
14 a small area in geography, like New England. The
15 West is a vast area with many different supply
16 basins and large infrastructure to support it.
17 These regions are all linked together. They are
18 largely planned separately today, but to the
19 extent that there are regional events, cold
20 weather events that affect multiple regions at
21 once, there is an area where there is potential
22 vulnerability in the west.

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1 Another potential area is that gas
2 generation that doesn't contract for firm
3 transportation active auctioning, as we heard
4 earlier this morning, may be subject to
5 interruption. Now, we largely don't have this
6 problem in the West because of our bilateral
7 market structure. In our largest deregulated
8 market, such as in California, we have a very
9 explicit planning standard that takes into
10 consideration the needs of the electric
11 generators. So, in that area, we have adequate
12 transportation capacity as well.

13 But if you're relying on a gas generator
14 that doesn't have that firm fuel, that generator
15 might not be firm. It might not be there when you
16 really need it to be.

17 But, of course, to the extent that our
18 natural gas needs will continue to grow, we'll
19 need to continue to expand our natural gas
20 infrastructure. The picture I have up here is of
21 our coal retirements case. And on the left hand
22 side, it's historical and natural gas demand

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1 throughout the West region. You can see it kind
2 of bounced around a lot, but it's largely been
3 flat for the last 10 or 12 years.

4 And our base case projects that to be
5 largely flat going out for the next 10 or 12 years
6 largely because of the increase in renewable
7 generation on the electric side. The red area --
8 the red wedge -- is the increase in gas demand
9 caused by the retirement of 23 gigawatts of coal
10 resources.

11 So you can see, it's a noticeable
12 increase in gas demand in the West, but it's not
13 one that's out of character with the types of
14 increases that we've seen in past, so we believe
15 this can be accommodated and our market
16 arrangements are adequate to do that.

17 And in the next slide is Phase 2, and
18 our key finding in Phase 2 is that increased
19 variability in gas demand that are caused by high
20 renewables. While it does create challenges that
21 need to be managed on an operating day basis, but
22 that overall, it appears that there are no

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1 technical barriers to doing that, and, in fact, if
2 you superimpose renewable resources on top of a
3 system that doesn't have them, the overall effect
4 is to reduce gas demand. It reduces gas through-
5 put. That provides pipeline operators with
6 increased flexibility, increased operating range,
7 to use storage and line pack to manage those
8 variable flows.

9 So if you can see the pictures on the
10 right show -- or it can be the results of one of
11 our simulations, where it shows operating
12 pressures under the base case are more challenging
13 than the ones under the high renewables case,
14 which are the ones in orange, because as the solar
15 and wind energy comes online, it allows the gas
16 generation to back off, which allows the pipeline
17 to be recharged and the line pack to be recharged,
18 thereby providing the flexibility that the
19 pipeline needs.

20 MODERATOR WELSH: Okay. Thank you all
21 for your summary statements. Let's just jump
22 right in. What I heard your panel -- what your

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1 comments say is that reliability and safety are
2 number one, and yet you have a real need for
3 flexible service. So how does improving
4 infrastructure answer that and how does that --
5 what are the steps to getting to that scenario?

6 Mr. Eves?

7 MR. EVES: You want me to start?

8 MODERATOR WELSH: Yeah. So what
9 infrastructure solutions do you have that result
10 in safety, reliability, and flexibility?

11 MR. EVES: So we undertake this in two
12 modes. One, on our own system where it's
13 improvements to the LDC or our transmission
14 facilities. But the second mode would be working
15 with upstream suppliers, on their storage,
16 contracting for storage or the improvements and
17 the capacity contracts that we're going to enter
18 into.

19 So the things that can and should be
20 done, and that we are doing, is replacing older
21 facilities, upsizing facilities, we're reducing
22 methane emissions, we are increasing the safety of

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1 the system as we modernize the infrastructure, but
2 we're also building the capability, couple it with
3 storage, but we're building the larger facilities
4 that have the line pack and the additional
5 flexibility.

6 So, basically increasing the flexibility
7 and the capability of the infrastructure, which,
8 hand in hand, increases safety.

9 MODERATOR WELSH: Mr. Moffatt?

10 MR. MOFFATT: I would have to tell you
11 the same for the upstream interstate pipelines who
12 are under the jurisdiction of the PHMSA and we had
13 a recent reauthorization that required even
14 greater inspections and the use of new technology
15 on inline tool.

16 So on a routine maintenance, which is
17 not included in the numbers I quoted earlier, but
18 on routine maintenance, we are repairing systems;
19 we are constantly refurbishing; we're taking out
20 and replacing compressors on a regular basis. All
21 of that increases safety. All of it does increase
22 reliability.

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1 One of the challenges that we've all
2 noted is the tremendous amount for -- well, really
3 from the mid-continent over to the East Coast, a
4 tremendous shift in how the systems are being
5 used, so that the demand on various systems is
6 different than it was for the prior 20 years, for
7 example. We're finding compressor stations that
8 have not been utilized in some number of years
9 that are now being retrofitted to reverse flow, to
10 take out south, for example, from the Marcellus;
11 or to take increased flow out of the Marcellus
12 midway in our system northeast. We're now
13 building west; everything is going to Chicago and
14 will disperse, as it has over the years. So all
15 of that adds reliability and safety.

16 As I mentioned earlier, increased
17 infrastructure, as well; new and added
18 infrastructure, whether it's in terms of
19 compression, larger pipe when you're replacing
20 pipe, or building new pipe, you have more
21 capacity, more line pack, more flexibility to work
22 with in trying to meet shifting demands in

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1 different parts of our system.

2 MODERATOR WELSH: Mr. Karnei?

3 MR. KARNEI: So when I look at this, I
4 obviously approach this from the electric grid
5 standpoint, and being from Texas, we're sitting on
6 a lot of gas, we're sitting on a lot of pipe, so
7 you would think everything would be good in Texas.
8 Not so.

9 So the three things I think we need to
10 do is we need to look at synchronizing, as was
11 discussed in the earlier panel, the scheduling of
12 the gas day and the electric day. I think the
13 FERC NOPR is well thought out, well-reasoned, and
14 a great start in that process.

15 I think we have to get access in the
16 electric industry toward no-notice service, more
17 non-ratable flows. That's a big concern of ours.
18 We're looking at developing additional generation
19 at ERCOT, and that's one of the things we're
20 looking at very closely.

21 And then long term, to make sure that we
22 can actually deliver when we have these cold

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1 winter days, and it's primarily and a winter
2 phenomenon in Texas, we're going to need more pipe
3 and more storage. I know we've got a big
4 discussion about who pays, but fundamentally,
5 that's what we're going to need, and that the
6 third piece.

7 MODERATOR WELSH: Thank you.

8 Ms. Musich. I cannot say your name, I
9 am sorry.

10 MS. MUSICH: That's fine. It's just
11 music, like the song.

12 MODERATOR WELSH: Musich, thank you.

13 MS. MUSICH: Anyway, yes, so as far as
14 safety goes, California, I think, is on the
15 forefront of the pipeline safety issues, and we
16 had a decision recently from the California Public
17 Utilities Commission that will allow us to
18 hydrocast or replace some of our older lines.

19 And, you know, our system is highly
20 piggyback, so we are very concerned about safety.
21 It's job one at our company, and so I think we do
22 a very good job with that.

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1 As far as reliability goes, because we
2 have slack capacity on our system, and that's part
3 of the planning standard from the California
4 Public Utilities Commission, our customers are
5 blessed with pretty liberal balancing rules, much
6 more complex than what you're dealing with. And
7 we have also substantial storage assets. We have
8 137 billion cubic feet of storage, and we can draw
9 up to 3 bcf in a day.

10 So, I think it's a good situation for
11 our customers, the electric generators and the
12 other customers on our system. I think we've done
13 a pretty good job of dealing with that.

14 MODERATOR WELSH: Thank you.

15 Mr. Olson?

16 MR. OLSON: I'd say the number one thing
17 -- and I will do this mostly from an electric
18 sector perspective as well -- the number one thing
19 is to make sure if you're relying on a generator
20 to provide electric service, that generator either
21 has firm transportation capacity -- it has firm
22 fuel, either natural gas, or backup fuel.

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1 It seems really simple, if you think
2 about it from a reliability perspective, but where
3 I come from, seems simple, but it's not.

4 And the second thing is the one scenario
5 that we found with the high renewal penetration
6 that can get you in trouble is with -- if there is
7 forecast error.

8 So, with solar, you know, you kind of
9 know a day ahead if the sun is going to shine, and
10 you have a good chance of what your demand is
11 going to be over a course of the day, but you may
12 not have that sense over, you know, one or two
13 hours ahead.

14 With wind, it gets a little bit more
15 difficult, so, you know, I think there's going to
16 be increasing pressure on -- then moving from a
17 day ahead to, you know, more near term, and I
18 don't know if it's all the way to hourly, but more
19 pressure on the kind of 4-hour ahead, 8-hour
20 ahead, 12-hour ahead kind of scheduling
21 timeframes, and more flexibility in the market
22 arrangements that will allow you to move that

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1 generation around in time as necessitated by the
2 regulator rules.

3 MODERATOR WELSH: Let me talk about that
4 a little more. Just generally, could you all give
5 me your comments on how the increase in renewables
6 on the system is impacting your system, your
7 forecasting, your plans for new infrastructure,
8 and what are you looking at? How is it impacting
9 you?

10 MR. EVES: So we've added very
11 significant amounts of renewables for -- we have
12 4500 megawatts of wind across three systems, and
13 about 500 -- 400 megawatts of solar, and you know,
14 we're significantly increasing the solar.

15 The wind has had a significant impact on
16 a lot of things, but in particular it's required a
17 flexible natural gas system to support on a firm
18 basis with the NNT, with the delivery flexibility
19 to support the gas peaking and combined cycle
20 generation that is so important to go with the
21 wind energy.

22 That's not to say that utilities --

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1 well, and we certainly have modified and improved
2 the ability of coal plants to regulate and even
3 cycle on and off over weekends or for a week or
4 two, to make changes in the way you operate other
5 facilities, like we had a peak pump storage
6 facility that used to be basically an economic
7 differential between, you know, surplus energy at
8 night from coal generation and peak prices in the
9 day; it's now basically a wind backup plan, and
10 it's used in that way.

11 So there's a lot of other changes that
12 can happen and need to happen, but the most -- the
13 single most important change to accommodate, you
14 know, significant amounts of renewable energy is
15 flexible natural gas generation because of the low
16 heat rate penalty, the flexibility that it has,
17 the quicker start time, stop times, cycling
18 capability, and so on.

19 The one other thing I would say, I
20 always find that when we have this discussion, we
21 think about changes the gas industry needs to make
22 to meet the electric industry's needs. And it's

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1 not just -- it has to work the other way, too.

2 For example, progressive areas of the
3 country that have implemented structured energy
4 markets, and we heard from some earlier on the
5 other panel, give the utilities an -- in those
6 regions, the electric utilities, the flexibility
7 to spread that, regulating, and response to
8 changes with wind in one region or another, and
9 lots of other kinds of resources. You can spread
10 that -- if you can spread that over 100,000 or
11 50,000 megawatt footprint, instead of having, you
12 know, one of the 35 balancing areas in the West
13 trying to do that on their own, that makes a huge
14 difference.

15 Likewise, we need to work -- the
16 electric generators need to look upstream to the
17 gas industry and contract for flexible delivery
18 not only to each plant, but to be able to move
19 that capacity that we've purchased in NNT
20 flexibility, move it around to different
21 resources, because there are effectively, through
22 the day, they are substitutes for each other. They

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1 work as a combined plant much like we look at an
2 electric load on the system that moves through the
3 city, and we treat it like one customer, like a
4 light rail system. And that's the way the power
5 plants are.

6 MODERATOR WELSH: Mr. Moffatt?

7 MR. MOFFATT: I think first of all,
8 looking across all of our pipelines, it's
9 obviously very regional. I think the bottom line
10 is that we have seen the need for increased
11 natural gas fired generation as a backup to
12 increase very slowly. I think that may be partly
13 because of the ramp up of various forms of
14 renewable energy have been somewhat more modest
15 than perhaps some of the expectations might have
16 been.

17 We also, though, see in the natural gas
18 industry quite an impact of efficiency, such that
19 we have a fair amount of efficiency gains within
20 the natural gas commercial, industrial, and
21 residential use, and we think there will also be
22 not one-for-one replacement of all coal-fired

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1 power plants, in part because of the efficiency.

2 So we're factoring that in.

3 To date, I would say it's been

4 overwhelming; however, if you look at the INGAA

5 study, we do, when we look out more, see much more

6 demand for laterals to connect electric

7 generation. How much of that is backup peaking

8 for intermittent power and how much is replacement

9 base load, I don't have that breakdown, but we're
10 seeing a mix of both of them.

11 MODERATOR WELSH: Thank you.

12 MR. KARNEI: So, in Texas, it's always

13 about the response to the market, and what we've

14 seen: we currently have 12,000 megawatts of wind

15 generation in the State of Texas. We've seen that

16 cause a significant reduction in wholesale prices

17 of electricity, which has caused people to -- when

18 they've looked at resource additions, primarily

19 look at peaking plants as opposed to combined

20 cycles because they don't run very often and you

21 have the ability to start and stop.

22 Under the clean power plan that was

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1 mentioned earlier, one of the building blocks EPA
2 did was additional renewables. If that plan goes
3 into place, we're going to have to increase our
4 renewables from 16,000 megawatts to 28,000
5 megawatts by 2030. That's going to put even more
6 downward pressure on wholesale prices,
7 particularly in the spring and the fall, which I
8 think is going to drive the market to build even
9 more peaking capacity and less combined cycle,
10 which is going to put even more stress and strain
11 on the natural gas pipeline.

12 The storage system, when we get into one
13 of these cold weather periods, and we even push
14 the button on a peaking plan at 6:00 in the
15 morning and run it until 10:00 in the morning.

16 MODERATOR WELSH: Ms. Musich?

17 MS. MUSICH: Got it. Okay.

18 In the written materials that I sent
19 you, I provided the results of some of our
20 hydraulic modeling that we've looked at, where
21 we've looked at what kind of pressure drops we can
22 see on our system where you add one quickstart

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1 unit versus three quickstart units versus, you
2 know, traditional electric generator, because this
3 is what we're seeing in California.

4 Pretty much every unit that is coming on
5 in California now, whether it's a peaking plant or
6 a combined cycle, is a quickstart unit. And so
7 we're at the -- what we've found is that when you
8 have one unit that's isolated from everything
9 else, you tend to not have that much of a problem,
10 but when you start working them together, such as
11 in the LA Basin, we've seen our hydraulic modeling
12 and shown that you can have, at 70 psig pressure
13 drop in about 15 minutes.

14 So, if you in gas control and you're
15 watching your pressure go completely down, you
16 don't know that it's going to bottom out and
17 you're going to be okay. And so it's causing us
18 to change the way the natural gas system is run,
19 and it's causing, you know, issues that we're
20 trying to grapple with and deal with, because this
21 is clearly the way the world is going, so the
22 natural gas industry is going to have to deal with

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1 that.

2 MR. OLSON: One of the things we've
3 found that comes back to the regional differences
4 that, I think we've heard I think kind of
5 throughout the morning, but we looked at various
6 different parts of the West, and the way that they
7 treat these issues are different because of the
8 way that the gas systems are structured.

9 And California, as Beth mentioned, and
10 in the Northwest, the balancing rules are very
11 liberal, these areas have a lot of storage --
12 natural gas storage that they can use to help with
13 the balancing, because there has never been the
14 economic pressure and the requirements to, you
15 know, have stricter balancing rules.

16 The counter-example to that is El Paso
17 in the Southwest, which the geology there doesn't
18 really support storage, so there isn't any.
19 That's also an area that has historically relied
20 on natural gas peaking resources to help meet
21 these needle peaks and electric demand. So it's
22 an area that's very familiar with variable use of

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1 natural gas. Natural gas use for electric
2 generation that's not ratable, that's -- varies --
3 rated dramatically throughout the day.

4 So what they've done is develop market
5 products that allow them to position their
6 pipelines with line back to meet those needle
7 peaks in electric demand.

8 So that's an example of how these --
9 this variability can be managed with a fixed
10 pipeline infrastructure if the right market
11 structures are in place. And this is kind of the
12 most extreme example because there isn't any
13 natural storage that's available to help with
14 that.

15 So this is an example that other
16 regions, I think, can look to as they need to
17 develop more strict balancing rules for
18 themselves.

19 MODERATOR WELSH: Did you have a follow-
20 up? No.

21 I want to ask you a little more about
22 regional differences. If you could speak to what

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1 is going on in your region to address the issue of
2 adequate supply of electricity and gas. Are there
3 coalitions, partnerships?

4 I asked the first panel about public-
5 private partnerships, the role of Federal
6 Government in those. But there may already be
7 regional efforts that we are either not involved
8 in or not aware of, so I know, Curt, you have a
9 national perspective from INGAA, but I wondered if
10 you all could talk about your regions and what is
11 going on collaboratively within the industry?

12 MR. MOFFATT: You want me to start?

13 MODERATOR WELSH: Sure.

14 MR. MOFFATT: Thank you. Let me just
15 pick -- I'll pick three.

16 As mentioned in the Southwest, we have
17 accommodated a lot of uneven load for a long time.
18 It is a challenge because there is no storage to
19 speak of. And, quite frankly, across the country,
20 we're seeing it difficult to develop storage.
21 Again, it goes back to the financials because
22 there is so much flow in gas, and there's not much

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1 basis between price points that people are not
2 parking gas, they're not storing it for any type
3 of arbitrage purpose.

4 So to try to develop new storage fields
5 right now, we need market demand from traditional
6 buyers of storage, and as we see it, they're not
7 willing to buy from storage firm transport,
8 they're not likely to buy it from storage. So
9 that's sort of connected.

10 In the Southeast, take SNG group for
11 example, Entergy, certainly the southern
12 companies, they're bilateral markets, they
13 function extremely well. They've had a fair
14 amount of penetration of natural gas in the
15 history -- over history.

16 Florida is another good example. It's a
17 bilateral market. It's at the end of the line.
18 It's a peninsula, but it gets the demand it needs
19 because it's backed by firm contracts with the PUC
20 supportive and flow through those costs.

21 The Northeast is a totally different
22 story. You know, the so called organized markets

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1 have various incentives built in, and the ISO's
2 each seem to be different that put pressure on
3 people signing up for firm capacity.

4 But firm capacity is what's needed, even
5 there, the geology doesn't support indigenous
6 storage to the Northeast. So all storage to
7 support the Northeast has to get transported. And
8 it has to get transported through the most
9 difficult development area, across New Jersey, New
10 York, Pennsylvania, into Massachusetts. We have
11 our Northeast direct project in Tennessee. It's
12 1.2 billion cubic feet a day project to expand.
13 And we built a 36 2.2 bcf.

14 People mentioned in 2003 to 2008, we had
15 tremendous shale pipes built. They were
16 subscribed to by producers. That was between one
17 set of board of directors and another. You struck
18 a deal; you struck a contract; you built it.

19 Northeast, this is their first market
20 pull with LVC primarily anchoring the pipe.
21 Totally different ballgame. We're back into the
22 1970's and '80s. And they have to look over their

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1 shoulders to their PUC. So it's a totally
2 different process.

3 And we also have tremendous development
4 risk. Once we get an economic deal with our
5 customers, we have all of the challenges to
6 getting our permits done, all of the people who
7 don't want a pipeline in their backyard. It's a
8 very difficult process to build a pipeline these
9 days. And I'll be glad to talk about that in the
10 wrap-up.

11 MODERATOR WELSH: Regional efforts from
12 Colorado, Mr. Eves?

13 MR. KARNEI: We've been -- have done
14 multiple studies on our costs because of our high
15 dependence on natural gas, the risk of
16 curtailments in a cold winter event either from
17 freezing on the gas infrastructure or possibility
18 -- we talked about this earlier -- of being in
19 rotating outages, and actually cutting off the
20 electricity on a rotating basis to gas compression
21 stations, and what's the domino impact of that.

22 We did a study on that a couple of years

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1 ago, and we're in the process of updating that.

2 The thing I'm concerned about now is I'm not sure
3 it goes far enough.

4 If you look at the Clean Power Plan,
5 there are multiple units in the base case of the
6 Clean Power Plan in ERCOT that are planned to be
7 shut down by 2020. So if we're going to get on
8 top of this, we really have between now and 2020,
9 assuming those assumptions are right and that plan
10 goes into place to make sure we have enough
11 infrastructure to support what we need, because
12 we're at risk of losing a lot of coal plants in
13 ERCOT.

14 MODERATOR WELSH: Thank you.

15 In California?

16 MS. MUSICH: Yes, so as far as the
17 coalitions or partnerships, I think the issue of
18 gas and electric, keeping both of them up, is very
19 near and dear to my heart. And we had a couple of
20 real life examples of that this winter, both in
21 December and in February.

22 In February, we ended up in curtailing

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1 end- use customers, and that was the electric
2 generation. It was very important to us to be able
3 to hold up the electric as well as the gas, and
4 the way we were able to do that was because of our
5 partnerships with California independent site
6 system operators as well as the other local
7 balancing agencies. We worked with them really
8 closely on that day, as we do every day, to make
9 sure that they had enough natural gas fired
10 generation to keep up the electric grid.

11 And absent that coordination, I am
12 fairly certain that we would have lost something,
13 probably the electric grid, in that situation. So
14 that partnership, and as I said, that's happening
15 every day, that we coordinate with them, and I
16 just -- and I think it's actually vital to both
17 sides of the -- so I think California is a good
18 example of how that can work.

19 MODERATOR WELSH: Great.

20 Mr. Eves?

21 MR. EVES: I guess when I look at
22 electricity and natural gas industry in an

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1 operating mode and coordination mode, and in a
2 long-term planning mode, the long-term planning of
3 the gas industry is probably the least coordinated
4 within any region.

5 I mean, it's done more bilaterally.
6 Just the nature of electricity and the way
7 everything flows across each other's facilities
8 requires more centralized coordinated planning
9 between all the interconnected companies.

10 We just don't operate that way when we
11 go out way into the future and pipelines are
12 competing with each other, and they'd like to sell
13 capacity to the LVC's and the generators, and --
14 so we do it more transactionally.

15 I don't know what kind of opportunity
16 there is, but if anything would drive the
17 potential for more regional coordination, it might
18 be the Clean Power Plan. I mean, it's going to
19 create a significant impact on many, many states
20 in terms of the amount of gas generation that
21 needs to be added in the future of our coal
22 plants, so it could be that there is something

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1 there.

2 But my sense is that we operate pretty
3 much -- you know, as utilities we operate under
4 the oversight of our state regulators hands-on
5 from a safety standpoint, but from a planning
6 standpoint, our state regulators oversee that,
7 whereas electricity there is a lot more FERC
8 oversight.

9 MODERATOR WELSH: Thank you.

10 Mr. Olson?

11 MR. OLSON: In the West, as far as the
12 regional issue, and you heard Beth talk about the
13 things that California has done, that's one of our
14 geography constraining load pockets where they've
15 been very concerned about these issues. It's also
16 a jurisdiction where, you know, everyone is kind
17 of under the same jurisdiction and the same
18 backyard, so they work -- they have a long history
19 of working very closely with these other --

20 The other geographically constrained
21 region is in the Pacific Northwest, and I think
22 you heard Lynn Dahlberg mention the effort that's

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1 been going on there under the auspices of the
2 Pacific Northwest Utilities Conference Committee,
3 PNUCC, and the Northwest Gas Association. That's
4 kind of a similar circumstance. But the area
5 that's constrained by geography with now, you
6 know, heavier lines on natural gas to meet peaking
7 needs is also a region that has a winter peak both
8 on gas and on power. So they've been very, very
9 concerned about these issues in natural gas and
10 portability.

11 Where we haven't seen as much effort, I
12 think, is West-wide, and that's one of the things
13 that our study has indicated is a vulnerability.
14 We've done pretty well in the West looking
15 regionally. We haven't done that well looking at
16 kind of West-wide weather events. And they do
17 come in occasionally. There can be a cold spell
18 that sets in over the West, and that's where we
19 might have things like well freeze offs that can
20 contribute to reliability events. And so that's
21 probably an area where it might be beneficial to
22 do more work regionally in the future.

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1 MODERATOR WELSH: Thank you.

2 So, let's turn to the QER now. I'm
3 going to ask you the same question I asked the
4 first panel, and that is what one critical
5 recommendation would you put forward to the task
6 force today, remembering that the task force is
7 grappling not only with what the industry's roles
8 and responsibilities are, but with what the
9 Federal Government's role and responsibility is.

10 So, why don't we mix it, and, Mr. Olson,
11 why don't you start with your one recommendation
12 to the QER task force?

13 MR. OLSON: Well, this is -- the title
14 of this panel is "Infrastructure Needs Through
15 2030," which is kind of a long way out there, but
16 when you start to think about 2030, that's pretty
17 close to 2035, and that's -- it starts to get
18 close to 2040, and in the year 2040 you're not
19 that far from 2050.

20 And 2050, if anyone has been following
21 sort of longer term climate issues, is a big
22 milestone for, you know, a lot of the efforts that

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1 have gone on on the global negotiations and the
2 target of, you know, reaching -- if we want to
3 reach two degrees Celsius of warming that
4 greenhouse gas emissions would actually need to
5 reach that level to be set at what they were in
6 1990.

7 So, we can continue to plan for 2030 as
8 if the next -- as if the world ended there, but I
9 think that would be a big mistake. And I think
10 it's time that some of these efforts that look at
11 2050 in isolation, and these efforts that look at
12 now to 2030.

13 We don't have the golden spike yet.
14 They have kind of taken a late charge in isolation
15 now, but at some point we need to start building
16 bridges between them, and start to think about
17 what the world does in like 2035 and 2040, and
18 whether that's the right path long term or not.

19 MODERATOR WELSH: Thank you very much.

20 MS. MUSICH: Well, I would echo that
21 sentiments as being representative as far as
22 recognizing the importance of the

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1 interconnectedness between gas and electric. We
2 really cannot look at one without the other. They
3 just really interplay, especially in places like
4 California where so much of the electric
5 generation is dependent on natural gas.

6 And so I think that you need to look at
7 them and make sure that the coordination between
8 the two is prominent in what you're looking at.

9 MODERATOR WELSH: So, do you mean in
10 terms of R&D, the Federal role of looking at the
11 two industries together?

12 MS. MUSICH: So I think he said that
13 earlier talking about, you know, somehow see LVC,
14 you know, for natural gas can go down because you
15 lose an electric compressors. And the same thing
16 can happen, you can lose the electric because
17 you've lost natural gas. And that was -- you
18 know, we lost supplies in natural gas, and that
19 had a huge impact on the electric.

20 And so I think you have to look at all
21 those factors, the infrastructure, adequacy of
22 supply, adequate -- not just infrastructure,

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1 what's supplied. You need them both. You can have
2 lots of pipe and have it empty, you're not really
3 helping yourself any. So just how are we going to
4 do the very best job we can to hold up both sides
5 of that coin?

6 MODERATOR WELSH: Okay.

7 Mr. Karnei?

8 MR. KARNEI: I love what Beth said, but
9 I think that's such a big issue. I'm looking for
10 something that we can get a stake in the ground
11 and execute on, and I would ask the QER to support
12 the
13 FERC NOPR.

14 The FERC NOPR revisions include starting
15 the natural gas day at 4:00 a.m.; moving the time
16 of nomination cycle later; increasing the number
17 of intra-day nomination opportunities to help
18 shippers adjust their scheduling. And we believe
19 as cooperatives at Brazos that this is very
20 thorough, well thought out, and it's a good first
21 step to starting this coordination process.

22 MODERATOR WELSH: Thank you.

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1 MR. MOFFATT: I'm going to go back
2 purely as Curt Moffatt and not a representative of
3 anyone today to when we thought of the Department
4 of Energy and the Carter Administration, and there
5 was a provision, the DOE Organization Act, where
6 DOE can propose a rule to the FERC. The FERC is
7 required to consider it. Not necessarily adopt
8 it, but consider it.

9 And then it was exactly these types of
10 issues, particularly, for example, ideas on
11 appropriate rate design and non-ratable take.
12 What is the end dynamic necessary to provide for a
13 four-hour take as opposed to 1/24th, which is how
14 we design our systems and allocate costs.

15 That's something that the researchers at
16 the Department were thought to have more
17 resources, to gather data, refine options and
18 ideas, and they proposed a rule to FERC.

19 The Congress and the Administration
20 recognized that as a regulatory agency constantly
21 engaged in on the record proceedings, it was much
22 more difficult and more limited resources at the

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1 FERC to undertake some of these policy
2 initiatives, and that was the idea of the dotted -
3 - part of the dotted line to FERC. The other had
4 to do with budgets.

5 But there is this rulemaking provision.
6 It's been used, I think, once by Spencer Abraham
7 in recent memory. It was used a little bit more
8 often right after the DOE was organized, but it's
9 sort of fallen by the board.

10 So, I think the QER has a tool
11 available. It will be interesting to see if they
12 choose to use it.

13 MODERATOR WELSH: Thank you.

14 MR. EVES: So, my recommendation may be
15 a little bit out in right field, but I agree with
16 what you've heard across the panel.

17 But, the one thing I would add to that
18 is, I look at the Federal Government, well,
19 particularly the FERC, and, you know, you could
20 ask anyone in the industry about their policy
21 around transmission and competitive wholesale
22 markets, and we all know about the incentives, and

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1 you know, so much work and direction that's gone
2 into advocating that.

3 This is hard for me to say next to the
4 biggest pipeline supplier, but I think encouraging
5 cost recovery, not just at the Federal level with
6 interstate pipelines, but across states with the
7 intrastate LVC, to make the investments that are
8 needed, and to get ahead of this and build a
9 system that has the additional capability and
10 flexibility, but also like we talked about
11 earlier, the safety and reliability.

12 And these facilities are getting very
13 old. There's a need to do this anyway, and we
14 definitely see the push from pens, that we see it
15 on the regulatory side in terms of what we need to
16 comply with.

17 But, I think we're all going to have to
18 invest more and more capital in this, and we can
19 do it in a way that's going to build a better,
20 more flexible system that then, alignment of gas
21 day, improved operations, all those other things
22 can take advantage of those facilities, so, it's

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1 not to say, Curtis, that we're not going to have
2 something to say about your next rate case, but
3 anyway.

4 MODERATOR WELSH: Well, let's talk about
5 financing a little bit. It's been talked about on
6 the first panel. You've certainly raised it, and
7 what's the impact of access to capital markets?
8 Is there money out there to invest in
9 infrastructure? If there is, what are the
10 challenges to accessing it? How does that play
11 with the topic of this panel, which is
12 infrastructure needs and challenges?

13 Anybody want to tackle that one?

14 MR. MOFFATT: I guess as the pipeline
15 representative that is projected to raise \$313
16 billion, I would say that the most important thing
17 is to have credit-worthy customers that are
18 signing contracts that cover the basic cost and
19 debt service of your project. Then it's between
20 us and our board of directors on the equity
21 component, which we're obviously going to have to
22 have some return on equity.

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1 But, whether it's a consortium of
2 companies that get together with some sort of
3 parental guarantees behind supply, I don't think
4 that really matters to the pipeline. It may have
5 issues with the FERC, and that may be another area
6 you want to look at, because of the capacity
7 release rules and how they nominate the scheduled
8 capacity within the consortium.

9 And -- but I think I speak for all the
10 pipelines that we look for credit-worthy parties,
11 and once that credit is established and it's a new
12 venture consortium, maybe through different types
13 of guarantees and letters of credit.

14 But I don't think the pipeline industry
15 has any difficulty accessing the markets, but our
16 lenders do look at our contracts, and they do look
17 up behind us as to who the contracting parties are
18 and what is their credit.

19 MODERATOR WELSH: Thank you.

20 MD. KARNEI: Not being in the gas side,
21 I haven't financed any state pipe recently, or
22 ever, but I would echo what Curtis said. I think

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1 there's a tremendous amount of interest out there
2 with lenders if you have facilities -- any
3 facility backed up by credit-worthy purchasers
4 with long-term contracts.

5 MR. OLSON: I would just echo -- I'm
6 sorry, Beth, go ahead.

7 MS. MUSICH: Okay, Arne.

8 For us, obviously, from a little bit of
9 a different situation because we -- because we are
10 regulated by the California Public Utilities
11 Commission and it's our rate payers who have to
12 pay for any infrastructure improvements. We did
13 file our application for a major pipeline in our
14 system recently -- last December -- and I can tell
15 you that our rate payers are very sensitive to
16 paying more money, and they want to make sure that
17 before they pay that money there is a good reason
18 why they need to pay increased rates. So, it's
19 always an issue for us, you know, trying to
20 convince them that we need to have additional
21 infrastructure. It's a challenge.

22 MODERATOR WELSH: Thank you.

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1 Mr. Olson?

2 MR. OLSON: Yeah, I was just going to
3 note that I think the experience overall in the
4 West has been that the recourse to captive rate
5 payers to finance very long-term investments is
6 really important. That's what establishes that
7 credit-worthy counter-party so that gas
8 infrastructure can be expanded to meet the needs
9 of the electric sector.

10 And that reason for that hasn't been
11 there, and that's where I think we've seen issues.

12 MODERATOR WELSH: Any thoughts on
13 financing?

14 MR. EVES: I think we share -- Colorado
15 or California -- same thing. It's really rate
16 recovery, rate impacts to our customers who can
17 access the capital. It's really a matter of
18 finding that right balance.

19 And I know our commission in Colorado,
20 and increasingly, I think, across the country,
21 have allowed pipeline system integrity adjustment-
22 type, as we call our clause, and we work with

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1 their staff on an annual plan to develop, you
2 know, the right amount of, you know, pipe
3 replacement, new lines, et cetera.

4 MODERATOR WELSH: Well, let me give you
5 all a chance to provide some final thoughts to the
6 task force and tell us what gaps in these issues
7 we've missed in our discussion here today. I
8 think it's been a good one.

9 Mr. Eves, why don't you start, because
10 you said you had some other things you wanted to
11 talk about.

12 MR. EVES: I think the one thing that I
13 would add to the discussion that we've had, and I
14 may have just started to touch on it, is, you
15 know, I've heard people joke about natural gas
16 being an input fuel for making electricity, and
17 frankly, the interrelationship between these two
18 industries and the amount of levers and
19 modifications to the market structure, to the way
20 we sell electricity, the way we deliver it,
21 considering the provision of firm versus
22 interruptible electric service, to the gas

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1 infrastructure, to the compressors, et cetera,
2 this is -- it's a continual circle, and it works
3 equally both ways.

4 I think it's really important to
5 include, and the Department of Energy should
6 incorporate, consideration of enhancements and
7 changes in the electric market that can provide a
8 -- you know, a benefit back to or maybe reduce the
9 demands for instantaneous, you know, natural gas
10 service the way that we'd like to have it.

11 Natural gas is never going to flow like
12 electricity. It's an instant business versus
13 something that you build up and send down a line,
14 and it takes a long time for it to get there, so I
15 don't know that we get to, you know, five-minute
16 gas markets, like we're headed to -- like we have
17 in electricity.

18 But you can change the way we sell
19 electricity. You can create more demand response
20 programs. You can create interruptible programs.
21 You can do more things on the demand side and the
22 supply side, and with other electric resources,

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1 and bigger markets, bigger footprints, organized
2 ISO's and structured markets that have a
3 significant change in the demand on this gas
4 infrastructure and the operations of the gas
5 system.

6 So, I like to think of them as kind of
7 siblings instead of, you know, one serving the
8 other.

9 So, that's the end of my comment.

10 MODERATOR WELSH: Thank you.

11 Mr. Moffatt?

12 MR. MOFFATT: Again, being here to talk
13 about infrastructure construction, I mentioned
14 earlier development cost risks.

15 I think another area that DOE is -- we
16 hope to be the advocate for the energy industry.
17 It's one thing to have Gina McCarthy talk about
18 needing more natural gas infrastructure on the one
19 hand as part of their greenhouse gas initiative,
20 but then her branch's comment on EIS's in a not
21 helpful way the very next day. It defies me why
22 the Department of Energy cannot, within the

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1 Executive Branch, coordinate better the choices
2 that are being made by DOI on the case of federal
3 lands, EPA in the case of EPA's comments on NEPA
4 documents, CEQ and Department of Transportation,
5 which is going to be making tremendous amount of
6 decisions on pipeline safety and integrity
7 standards for all for safety, but there are
8 choices as to how dependent you are on hydrostatic
9 testing, for example, versus use of other data
10 that's reliable from inline tool.

11 So, just a few examples, but I think DOE
12 can play a much stronger coordinating role within
13 the departments.

14 MODERATOR WELSH: Thank you.

15 MR. MOFFATT: Within the Administration,
16 sorry.

17 MODERATOR WELSH: Yeah.

18 MR. KARNEI: In my opening remarks, I
19 mentioned my big three: support the FERC NOPR;
20 somehow get to more of a gas market that puts more
21 hourly like the electric market with additional
22 services; and number three, we need more capacity,

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1 more pipe, more storage.

2 But, my concluding remarks are going to
3 be that when you look at the Clean Power Plan,
4 particularly in Texas, it's going to be a redo of
5 our grid. We need to start planning now for what
6 our grid looks like in 2020, because it's going to
7 have much more renewables, much less coal, and
8 therefore we're going to need a lot more gas.

9 So that's what we need to start planning
10 for is a different type of grid coming in 2020 to
11 2030, and I think we're going to have to do the
12 same thing on the gas side, not only how the
13 market is structured, what services are offered,
14 and I guess my parting comment here is I want to
15 make sure I'm not underestimating this effort in
16 front of us for the next five to seven years.

17 MS. MUSICH: So, I just want to make
18 sure we focus on the challenges the gas system is
19 going to be facing as these renewables come on
20 line, and the ramping issues associated with that.

21 And also ask that you would encourage
22 and support that relationship between the gas and

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1 the electric side that I've talked about a number
2 of times.

3 I can tell you that establishing that
4 relationship when you're not under stress is key,
5 because when you are under stress, you don't have
6 time for all the niceties. You have to trust each
7 other, you have to understand both sides, and you
8 have to make decisions very quickly, so that
9 support of that relationship is important.

10 Thank you.

11 MODERATOR WELSH: And when are those
12 industries ever not under stress?

13 MS. MUSICH: Yeah. Good point.

14 MR. OLSON: I'm kind of struck by -- I
15 think I'm a little bit bipolar, I guess, because
16 those are two very different focuses of the
17 discussion this morning.

18 One of them is very, very long term, and
19 one of them is very, very short term. And so
20 we've been kind of focused on both.

21 The longer-term needs are to 2030 and
22 beyond. You know, will we continue to replace

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1 coal generation with natural gas generation,
2 thereby increasing demand for natural gas and the
3 need for new pipeline and natural gas
4 infrastructure? How long will that continue?
5 Will, at some point, the demand for natural gas
6 begin to decline as we get more and more serious
7 about power production later in the century? When
8 and how soon does that start?

9 At some point, we'll be at the point
10 where we need to have -- where we're reaching the
11 economic lifetime of the investments that we're
12 making now, and we'll need to start to have more
13 and more certainty about the future of those
14 investments.

15 Now, the good news is that for this
16 industry, and Michael has been doing some really
17 interesting work that shows there might be an
18 interesting future for the natural gas industry to
19 supply a blended supply including -- introducing
20 more hydrogen in the supply and introducing
21 sources of bio- gas, possibly doing things that
22 are even more interesting like power to gas,

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1 taking advantage of this big infrastructure that
2 we've built and using it to help balance some of
3 the issues on the electric grid, as it's already
4 doing today.

5 So there is a long-term future that is
6 interesting and worth thinking about.

7 Then we have this very, very near term
8 focus on, you know, solving those issues around
9 the variability, some of which is caused by the
10 increase in renewables, some of it is already
11 there, anyway, due to the challenges of supplying
12 this commodity to an electric sector that needs to
13 be balanced on an instantaneous basis, and those
14 things are very serious and need to be addressed
15 as well, and I think there are a lot of efforts
16 going on there.

17 As we heard today, there still isn't
18 really consensus about what needs to be done on
19 all those, and I hope that the industry can get
20 there soon.

21 MODERATOR WELSH: Well, thank you all.
22 I think we've learned a lot about the

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1 infrastructure challenges, and certainly many of
2 the solutions articulated here. Thank you all for
3 joining us. Let's give them all a great round of
4 applause.

5 (Applause.)

6 MNOERDERATOR WELSH: It's rare that
7 we're running a little ahead of schedule, but we
8 are, so let's just move forward and set up for the
9 open mic session. And I would ask the DOE staff
10 to come forward.

11 (Pause in proceedings.)

12 MODERATOR WELSH: So now we turn to the
13 portion of our meeting where we hear from
14 attendees.

15 For those of you that are watching
16 livestreaming, that doesn't mean we don't want to
17 hear from you as well. So please submit written
18 comments. Really, truly, they are read, in detail,
19 and considered very seriously. So, I'm going to
20 do it one more time. The address is
21 QERComments@hq.doe.gov.

22 For those of you in the room, we have

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1 two speakers who have signed up today, but before
2 we hear from them, let me introduce our Department
3 of Energy panel.

4 To my left is Chani Vines. She's a
5 senior advisor in the Office of Energy Policy and
6 Systems Analysis.

7 Matthew McGovern, also in the Office of
8 Energy Policy and Systems Analysis as a special
9 advisor.

10 And Levi Tilleman in that same office as
11 senior advisor.

12 All three of these people are spending
13 night and day working on the QER. It is not a 9-
14 to-5 process. Very dedicated Federal public
15 servants.

16 MR. TIMMELMANN: But, Peggy, just, Matt
17 is senior and I'm special.

18 MODERATOR WELSH: Oh. All right. So
19 noted.

20 So with that, let me ask for our first
21 speaker to come up to the standing mic in the
22 aisle, and that is Brad Bouillion.

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1 Brad, we have the timer on, and you have
2 five minutes.

3 Speak closely into the microphone.

4 MR. BOUILLION: I have only a couple of
5 comments. I had more but I'm getting old now.

6 MODERATOR WELSH: So you can submit them
7 as written --

8 MR. BOUILLION: I have two, I think.

9 The two observations I had was during
10 the discussions there was comments related to the
11 gas day starts. I'm Brad Bouillion. I'm
12 representing the California ISO.

13 And there was multiple gas day starts,
14 and I wanted to just reiterate that California ISO
15 is the one ISO that accepted all the gas day start
16 timings because we believe you can look at other
17 issues and other solutions, and the gas day start
18 is really just -- it's not the crux of the
19 problem; it's one of the symptoms that we're
20 seeing.

21 The second one was a discussion on
22 regionality -- a discussion of regionality, and

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1 unique principals involved in the markets. And in
2 California we actually have the gas cycle
3 nominations will close, and we immediately our day
4 at market for the next day. And our participants
5 like that structure because it gives them price
6 certainty when they go to the market. And that's
7 because of two conditions. It's because in
8 California, we have deliverability certainty on
9 the gas side, a function of what you heard
10 earlier. And also that we have stability in our
11 day-end market. Our day-end market is highly
12 representative of what our real-time solution is.
13 So there is very little variability between the
14 day ahead and the real-time markets.

15 So these two conditions, I don't want to
16 consider them to be all the -- for California
17 versus other ISO's, but the way that we have them
18 set up, it's a condition -- given the conditions
19 we have, it's a solution that works, and I'm
20 encouraging additional investigations and
21 discussions to say, "Okay, there is more than one
22 way to be right here. It's not one solution,

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1 because not everybody has the same conditions in
2 their market that are simply solutions." People
3 are trying to solve their problems and move
4 forward here. We've heard a lot of discussions on
5 that, and I think that when we look at
6 California's market, our renewables penetration is
7 very high. Our growth in our rurals is very
8 extremely high. We have no coal. We're over two-
9 thirds gas fire; we're 68 percent gas fire.

10 So, I mean, everything is in our market
11 that I think the rest of the country is headed
12 towards. And I want to encourage us to learn
13 because we made mistakes as we go along, but I
14 hope other people don't repeat those mistakes so
15 that we all learn and we all leverage the learning
16 to make the process less painful for people that
17 are moving along slightly behind us or right along
18 step with us, but just watch those percentages.

19 That's all I want to say.

20 MODERATOR WELSH: Thank you very much.

21 Our second speaker is Pam Silverstein.

22 MS. SILVERSTEIN: I'm Pam Silverstein

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1 with the National Rural Electric Cooperative
2 Association. Thought it was two great panels. I
3 want to thank the DOE for putting this together,
4 and for the three of you and your colleagues, I
5 know how hard you are working. I've had
6 conversations with your colleagues at nights and
7 on weekends, so it's going to be a long summer,
8 but you will -- just schedule your vacations for
9 next February.

10 I think one thing that I was thinking
11 about was I think it was in 1978, and maybe it was
12 somewhere around when DOE was created, but there
13 was a Fuel Use Act that actually really sharply
14 restricted, if not outright prohibited, the use of
15 natural gas for electricity.

16 And that's, in the scheme of things, not
17 that long ago. And I just wanted to point that
18 out. Well, in my life -- in our lives. Not that
19 long ago. So this incredible revolution that we --
20 and of course, everyone knows, the shale scale is
21 just a creature of really the 21st century, so the
22 changes have been very, very fast. Very rapid,

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1 and everybody is running in place to keep up.

2 In terms of something that I think is
3 incredibly important for the QER to undertake, and
4 to echo something that Curt said, and I'm not just
5 calling him out because he called me out, but the
6 fact of that is one of the four building blocks of
7 the EPA greenhouse gas when it was in (inaudible)
8 does really depend on gas-fired generation
9 replacing so much of the coal.

10 Mr. Olson was talking about looking past
11 2030 to 2050, but that's the near-term issue. I
12 mean, that's in the next two, five, seven years.
13 And I think, you know, people like to say, "What
14 keeps you up at night?" I think that's what
15 should be keeping us up at night.

16 Curt mentioned in passing, the
17 difficulty of building interstate gas pipelines
18 right now. I mean, one thing that the Natural Gas
19 Act has that the Federal Power Act does not have
20 is the Natural Gas Act does give FERC the deciding
21 authority, and once a pipe has a certificate, it
22 can go ahead and come down and whatever. Electric

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1 sites can do that for transmission, but even with
2 that, the process of building pipe is painful,
3 long, and expensive, and if we are to -- having
4 this confluence of issues where we meet at a lot
5 more depth of infrastructure, they'll -- now to
6 accommodate, you know, the impact of whatever
7 changes come about as a result of the EPA regs, I
8 think it's a potentially scary future out there.

9 I think that as many of you probably
10 know the House Energy and Commerce Committee is
11 holding a hearing tomorrow, to which all five FERC
12 commissioners have been invited/commanded to
13 appear, and that is the very topic. So that's
14 really something that I think the -- you know,
15 it's part of the Presidential Climate Action Plan
16 with QER, but there does need to be more
17 coordination between federal agencies like siloes
18 and really are almost working at cross-purposes to
19 each other.

20 UNIDENTIFIED SPEAKER: Thank you.

21 MODERATOR WELSH: So that is the
22 conclusion of our open mic session. Let me turn

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1 the floor over to Matt McGovern.

2 MR. MCGOVERN: Well, first, is there
3 anyone else in the audience that wants to speak
4 today that we didn't get?

5 MR. LARSON: Doug Larson, Western
6 Interstate Energy Board, these views are my own.

7 The concern and argument made for the
8 long-term view that I think is really important
9 for the QER to pay attention to. Also, the QER
10 needs to pay attention to the question of whether
11 methane leakage, in fact, is going to cause
12 natural gas to be a more greenhouse or highly
13 greenhouse gas intensive fuel, not unlike coal.

14 So if that is the case, then our worries
15 about gas infrastructure are probably expressed.
16 So my suggestion would be that QER pay close
17 attention to the issue of methane mitigation and
18 its effect on greenhouse gases.

19 Thank you.

20 MODERATOR WELSH: Thank you, Doug.

21 MR. MCGOVERN: Thank you.

22 Anyone else?

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1 All right. Well, we'll just wrap up.

2 First, I just want to thank everyone for
3 coming today, and thank you to our panelists for
4 putting together your presentations and traveling
5 to this meeting and giving the DOE the input
6 that's so important for the QER process.

7 I also want to thank the -- all the DOE
8 and energetic staff who helped put this meeting
9 together. And thank the Auraria Higher Education
10 Center and Metro State University staff who helped
11 put the meeting together and host us here and
12 livestream the event online.

13 We are still taking comments on our
14 website, Energy.gov/QER. You can also email them
15 to QERComments@hq.doe.gov.

16 We've got several other meetings coming
17 up. Our next meeting is in Chicago on August 8th
18 on rail, barge, and truck transportation.

19 The same day, August 8th, we'll also be
20 in Bismarck, North Dakota, for a meeting on
21 (inaudible) and infrastructure constraints.

22 We'll be -- after that, we'll be in

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1 Santa Fe for state, local, and tribal issues.

2 That's August 11th.

3 August 21st we'll be back in Cheyenne to
4 discuss infrastructure siting.

5 And the next one after that is in Newark
6 on September 8th. That's for electricity
7 transmission, storage, and distribution, focusing
8 on the eastern states.

9 So we've got several more meetings
10 coming up. All the information about our past
11 meetings and meetings coming up is on
12 Energy.gov/QER.

13 And with that, we'll wrap up today.
14 Thanks everybody.

15 (Whereupon, the meeting was
16 concluded at 12:20 p.m.)

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1 CERTIFICATE OF COURT REPORTER

2 I, ROGER MEYERS, the reporter before whom the
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4 that the witness whose testimony appears in the
5 foregoing deposition was duly sworn by me; that
6 the testimony of said witness was recorded by me
7 and thereafter reduced to typewriting under my
8 direction; that said deposition is a true record
9 of the testimony given by said witness; that I am
10 neither counsel for, related to, nor employed by
11 any of the parties to the action in which this
12 deposition was taken; and, further, that I am not
13 a relative or employee of any counsel or attorney
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15 otherwise interested in the outcome of this
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3 I, VALORI WEBER, hereby certify that I have typed
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