NEW ENGLAND REGIONAL INFRASTRUCTURE CONSTRAINTS

A Public Meeting on the Quadrennial Energy Review,

Hosted by the United States Department of Energy

Part II: Hartford, Connecticut

April 21, 2014

Connecticut Department of
Energy And Environmental Protection
Phoenix Auditorium
79 Elm Street
Hartford, Connecticut

AGENDA: NEW ENGLAND REGIONAL INFRASTRUCTURE CONSTRAINTS
Part II: Hartford, Connecticut, April 21, 2014

Introduction & Officials Panel

U.S. Secretary of Energy Ernest Moniz
Governor Dannel P. Malloy
Representative Elizabeth Esty
Representative John B. Larson
Commissioner Robert Klee

Panel 3: Infrastructure Needs for Gas-Electricity Transmission, Storage and Distribution

Gordon van Welie, President & CEO, ISO New England, Inc.
Thomas May, Chairman of the Board, President & CEO, Northeast Utilities
Tom King, President, National Grid US
Bill Yardley, President, U.S. Transmission and Storage, Spectra Energy

Panel 4: Infrastructure Needs: Challenges and Solutions

Glenn Poole, Manufacturing Support Manager - Energy, Verso Maine Energy, LLC
Lawrence J. Reilly, Principal, Rosewood Energy Consulting, LLC; Chairman, Vermont Electric Power Association
John F. Bilda, General Manager, Norwich (CT) Public Utilities; past president of Northeast Public Power Association
Peng Zhang, Assistant Professor, University of Connecticut
Rick Terven, Executive Vice President, United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States, Canada & Australia

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Panel 5: Regional Approaches to Solutions

Steven Clarke, Assistant Secretary, Executive Office of Energy and Environmental Affairs, Commonwealth of Massachusetts
Nicholas Ucci, Chief of Staff, Office of Energy Resources, State of Rhode Island
Asa Hopkins, Directory of Energy and Policy Planning, Vermont Department of Public Service
Katie Dykes, Deputy Commissioner for Energy, Department of Energy and Environmental Protection, State of Connecticut
Patrick Woodcock, Director, Maine Governor's Energy Office

Open Microphone for Public Comments

P R O C E E D I N G S

MR. HANSEN: Good afternoon. I'd like to officially call this meeting to order. My name is Fred Hansen. I am the facilitator for this afternoon, and I'd like to begin by reading an official statement about our purpose today.

Pursuant to the Federal Advisory Committee Act, the purpose of today's meeting is to ask your individual input or your organization's input regarding regional infrastructure constraints and provide a forum to exchange information. To that end, it would be most helpful to us for you to provide these recommendations and information based on your personal experience, your advice, information, or facts regarding this topic. The object of this session is not to obtain any group position or consensus. Rather, the department is seeking as many recommendations as possible from the individuals at this meeting.

Before we begin, I'd like just a few housekeeping items. First, the rest rooms are right out this door. Make a hard left, go past the elevators, through the double doors, and that's where they are.

Second, at the end, at 4 o'clock, we will have an open mic session. If you would like to make a comment, you have made a mark next to -- when you signed in. So if you want to make a comment and you haven't checked that box when you signed in, you have to go do that.

With that, it's my distinct honor to introduce Robert Klee, commissioner for Connecticut's Department of Energy and Environmental Protection. Commissioner Klee.

COMMISSIONER KLEE: Hi. Good afternoon, everyone. Thank you, Fred. Thank you, Secretary Moniz, Governor Malloy, Congressman Larson, Congresswoman Esty. Thank you all for being here today. And thank all of you out there in the audience for your interest in critical energy policy choices.

One more little housekeeping. If anyone wants to access wireless today, the logon is DEEPguest, D-E-E-P guest, and the password is Energy2014. I had to get that one out of the way. Thank you.

As Fred mentioned, I am Rob Klee, the commissioner of Connecticut's Department of Energy and Environmental Protection. I was recently honored to be nominated by Governor Malloy to serve as commissioner, and

I was confirmed by our general assembly with the support of legislators, I believe some of whom are in the audience today.

I want to welcome you all to the headquarters building of what is truly a remarkable state agency. Here at the Department of Energy and Environmental Protection we are responsible for everything from energy policy to protecting the quality of the state's air, water, and lands through our regulatory programs, to operating our remarkable state park system, to maintaining our state forests, and regulating hunting and fishing. So it's a broad remix for the Department of Energy and Environmental Protection.

But today, of course, we're here to talk about energy issues, which has been a major focus of Connecticut under the leadership of Governor Malloy. I know the governor will tell you more about the progress we have made in a few minutes.

I also wanted to open up by thanking the Obama Administration for ordering the Quadrennial Review that is being headed up by the Department of Energy. We believe this process can lead to real solutions to some of the most

critical energy challenges we face.

So thank you, Secretary Moniz, and your agency for leading the charge on this, and thank you for selecting Hartford and our DEEP building as a site of one of the public meetings you're holding around the country.

So now I'd like to ask you, Mr. Secretary, to come down and share your thoughts with us on energy issues and the Quadrennial Review. Secretary Moniz.

SECRETARY MONIZ: Well, thank you, Commissioner Klee, and thank you, Governor Malloy and Congressman Larson and Congresswoman Esty, great friends. And I must say even before the governor describes what's going on in the state, I would say how much we admire what's going on in the state in terms of clean energy and some of the really pioneering efforts, Green Bank and other mechanisms, but I guess I will leave that for you to describe.

Let me say a few words about the Quadrennial Energy Review, just as a context. I don't want to spend too much time on this, but the idea, first of all, is that we know that, although we are the Department of Energy, energy equities, energy concerns, energy perspectives are very important throughout the entire government, and

multiple agencies have very important roles. And that's why one of the purposes of the QER is under the chairmanship in the White House, in the Office of Science and Technology Policy, the Council for Environmental Quality, we are bringing together colleagues across the government to look at energy in the context of our economic aspirations, our environmental concerns, and our security concerns, integrating all three of those. In that structure the Department of Energy then plays the role of an executive secretary, providing a lot of the analytical focus and providing an organization for multiple stakeholder meetings across the country.

Today we are in Providence and in Hartford having the first of those regional meetings following a kickoff that we had in D.C. Why are we doing that? Because we know as we examine the energy infrastructure issues that will be the focus of this year's activity, the transmission, storage, and distribution of energy, that we know those challenges are very regional in nature. So we are going out to all the regions in this country to get input, which I want to assure you is and will be for our analysis extremely important to us.

Here we are, you know, we are living, speaking of this region, New England, and one of the reasons we're starting here is that we live in a time in which there out there in much of the country the talk is about the energy revolution, the abundance of energy that we have, the way that we are in fact drawing upon new resources, natural gas, for example, across the country, promoting renewables, at the same time reducing carbon emissions. But yet if we come here it's not a discussion of abundance. It's a discussion of, in particular, infrastructure constraints, for example, that really, first of all, have prices here often very volatile and much higher than other parts of the country.

I was telling the governor, Governor Malloy, earlier that an interesting kind of bizarre anecdote that almost makes the point is that some years ago in looking at solar energy we found that the payback period for a solar installation was significantly shorter here than in Arizona because, although the sun may be better in Arizona, the price that you're competing against is quite different. And so it just kind of makes the points of our country have such different energy challenges, and this is what we are

about to look at.

Another point in terms of integrating different issues with regard to infrastructure is that we also should keep in mind that what we're about really in the end is providing services, lighting, heating, mobility, good business environment through energy. And so, again, as we look at solutions, it's not just one thing. For example, natural gas pipeline infrastructure is obviously a big issue here. But this past winter fuel-switching was a big issue, bringing in potentially renewables from other parts of this country or Canada. All I'm saying is that there are many ways of addressing the key services that we need to provide. That's also part of the integrated analysis.

Another part -- and I'll just end with this -- is if we look at the risks to the energy infrastructure. We have seen multiple occasions, just in the last couple of years, Sandy in 2012. Polar vortex had quite some direct relevance here and other parts of the country. We saw tremendous strains in the system from energy infrastructure, whether it was propane in parts of New England or the upper Midwest especially, infrastructure problems in moving product to that place. Here in New

England we can talk about $80 gas spikes here over the winter, competition between heating and electricity, et cetera. So we have those challenges, particularly in the context of global warming, but we also have cyber challenges. We have physical risks of that infrastructure. We have risks that come from the interdependency of different infrastructure, as in Sandy when fuels could not be moved for lack of electricity, even though the fuels were there. So these are all a set of risks that we will want to be looking at also in a unified way as we look to a 21st century infrastructure that is resilient and satisfies our economic, environmental, and security concerns.

So that's kind of a big-picture backdrop as to what we are doing, and I'll just end by repeating again the regional variation in this country is tremendous. The need to look at these solutions, in particular the low-carbon solutions for the future, we need to look at those as solutions that will themselves be quite different in different parts of the country. What's the mix? How do we get the infrastructure in place to enable that to occur? And that's what we look forward to hearing from you. Thank you.

COMMISSIONER KLEE: Thank you, Secretary Moniz. I now would like to introduce my boss, Connecticut's governor, Dannel Malloy, who is truly a visionary in energy matters. With his guidance and leadership our state has reversed decades in which energy issues were an afterthought. With his direct and active involvement we have now emerged as a leader among states with a bold and innovative approach for a new cheaper, cleaner, and more reliable energy future for the citizens and businesses of our state. Governor Malloy.

GOVERNOR MALLOY: Thank you. Thanks for the introduction, and thanks for the hard work that you and this department are doing on a daily basis. I very much appreciate it.

I want to welcome the secretary here, and I want to thank you for selecting Hartford as one of the locations for this type of meeting. We're honored to have you here. It was great to spend some time over lunch with you as well.

Mr. Secretary, what you will hear today is that families and businesses in Connecticut and in fact all across the New England region have for too many years paid

some of the highest energy costs in the nation, as you indicated. Since I took office it has been one of my top priorities to bring these costs more in line through innovative programs and policies. Under my direction, we have created a Department of Energy and Environmental Protection to harmonize our energy policy with our environmental goals. With the input of hundreds of stakeholders we wrote a comprehensive energy strategy for the state, the first-ever long-range plan for cheaper, cleaner, and more reliable energy in Connecticut.

At the core of our strategy is energy efficiency, because the cheapest and cleanest form of energy is the energy you don't use. And so my administration has doubled the funding for efficiency programs that help homes and businesses bring down their energy bills. Reliability is another concern brought home by the extreme storms that we have experienced in the last few years, and you specifically referenced one of those.

Through legislation and regulatory action, we are building a more resilient electricity distribution infrastructure. It features development of innovative microgrid systems that use cutting-edge technology to keep

power in key government facilities and in some downtown and commercial areas across our state. Under my leadership we are meeting the state's commitment to rapid deployment of renewable generation at the lowest cost to our ratepayers, and we are harnessing market forces to secure the lowest cost clean energy projects through reverse auctions and competitive procurements. We launched the first-ever Green Bank to attract private investment and clean energy projects here in our state, and I'm very proud of the results. Since 2010 the amount of in-state renewable generation has increased tenfold, and long-term power purchase agreements -- one that we recently signed will supply 3.5 percent of the state's electricity needs from wind and solar facilities, saving ratepayers more than $200 million from what previously had been estimated would be the cost.

It will take some time for renewable energy to meet a large portion of our energy needs. So my energy strategy identified natural gas as the bridge to the future. Natural gas prices are well below the cost of oil and expected to remain so for many years. And it is a fuel that burns much cleaner than oil. So we directed the gas

utilities to expand the state's natural gas distribution infrastructure through a ten-year plan that will give 280,000 homes and businesses in Connecticut the opportunity to save from their current costs.

We are also modernizing our transportation infrastructure to support alternative fuels and alternative fuel vehicles, cutting down on major sources of air pollution and energy costs. I recently signed an eight-state agreement to promote the use of zero-emission vehicles in order to put 3.3 million of them on the road in the next twelve years. We've become a range-confident state for electric vehicles with the help of small grants that give our state an unrivaled network of public available charging stations, one of which we will dedicate here tomorrow.

In implementing our energy strategy, we've developed an approach that we think can be a model, Mr. Secretary, for states and communities across the nation. We believe that price competition and not price subsidies is the key to an affordable, renewable future. The public should not have to pay unreasonable prices for clean energy. Ratepayers and developers win when we open

up the playing field to all takers and technologies so that the market can determine what works best. We believe that we can't finance our energy future through taxpayer or ratepayer support alone. We are engaging private capital through our Green Bank, and we're having success in leveraging precious public funds to attract private investment in our energy initiatives.

With the firm direction provided by our energy strategy, we are making progress in reducing bills for homeowners and reducing operating costs for businesses, helping them to be more competitive and freeing up capital for expansion and job creation. However, I do not and will not ignore the spikes that you've referenced in your comments earlier and that we experienced here in costs in Connecticut.

We are also making a real dent in reducing air pollution and carbon emissions, giving us cleaner air and helping to combat climate change, and our clean energy programs are creating jobs across the state. Skilled workers are weatherizing homes, installing and maintaining solar systems and fuel cells and other renewable energy facilities and putting new natural gas lines under our

streets.

Despite our tremendous success and optimism for our energy future, there are limits, however, to what we can achieve as a single small state. We are facing tremendous energy infrastructure challenges that transcend our state borders and demand a regional solution. Just a few hundred miles to the west of us are plentiful domestic supplies of low-cost natural gas that are attracting industry back to America's shores for the first time in decades. Our electric generation fleet has increasingly shifted to burning gas over the past few years, which has contributed to lower wholesale prices and lower greenhouse gas emissions.

But we no longer have enough pipeline capacity to bring all of the gas we need into our region. We experienced the consequences this winter. There were days when thousands of megawatts of natural gas generation in the Northeast were not operating because they couldn't access gas fuel. This jeopardized the reliability of our grid and caused us to rely on dirtier coal and oil plants to keep ourselves running. And these natural gas supply constraints spiked the wholesale price of electricity to

record highs, costing consumers of our six-state region an estimated $3 billion in extra energy costs. Factories shut down, homeowners saw their electricity rates jump to all-time highs, and the market has not produced a solution to this particular problem.

These consequences are unacceptable to our economy, our environment, and our citizens. That's why I led the charge with my colleagues in New England for a six-state initiative to expand energy infrastructure and lower the cost of electricity for our region. This regional governors' initiative will help us make the new investments needed in electric transmission and natural gas capacity. We need to modernize and expand New England's electric transmission system in order to tap the potential of clean and cheap domestic renewable and Canadian hydroelectric power to help meet our needs for electricity from more diverse resources or set of resources. We also need to build up the network of natural gas pipeline so that we can bring much needed fuel to the region's power plants.

We are pleased, Mr. Secretary, that the focus of this session today is New England's regional infrastructure

constraints. Upgrading our electric transmission system and natural gas pipeline capacity are two of the major challenges facing New England. I know I can safely speak for all six New England governors in saying that we welcome the support and the assistance of the U.S. Department of Energy and other federal agencies in supporting our regional efforts. Finding positive solutions to the energy challenges facing Connecticut and New England and the nation is critical to building our economy and creating jobs, providing opportunities and prosperity for our citizens, protecting our environment, and slowing climate change. We look forward to working with you, Mr. Secretary, to find workable, commonsense answers that will ensure a bright future for our state, our region, and our nation. Thank you.

COMMISSIONER KLEE: Thank you very much, Governor.

Also with us today are Congressman John Larson from Connecticut's first district and Congresswoman Elizabeth Esty from our state's fifth district. Congressman Larson and Congresswoman Esty have been strong voices for our state in efforts to address the energy

challenges facing Connecticut and our nation, and we thank you both for all your good work in Congress, and we'd like to give you a few moments to share your thoughts with us. I'll start with Congressman Larson.

CONGRESSMAN LARSON: Thank you, Commissioner. It's great to be here, great to be joined by my colleague Elizabeth Esty, who serves so well on the Science and Transportation Committees and understands these issues so thoroughly well for the State of Connecticut. She also had a husband, I think, that was involved recently with the state and knows a little bit about it as well, and we thank him for his service as well.

It's always good to be here with the governor of this state. As you just heard in his address, I've served in government for quite a bit of time now, both in the state legislative process and now in Congress, and one thing you recognize immediately in leadership is someone who has the skill and the administrative ability to make tough decisions and make tough decisions amidst crisis.

Now, would it be that Sandy and the polar vortex were the only two things that this governor has faced, that would be one thing. But he has not, and these have been

tough times. But through it all I think people from every walk of life in this state understand what principled, centered leadership is all about in the way that Dannel Malloy conducts himself and continues to the run the State of Connecticut. Just in his address he talked about two things that I think are worth underscoring. One, for the first time in the state's history, first time, we have a comprehensive energy strategy. Would it be that we had a national strategy as well. No fault of the secretary or the President's, but we'll get to that later.

Further, not only is he first in putting this forward for the state, recognizing the regional problems that we face and the importance to business and commerce and also for those of us that have to survive and saw the spikes that the governor alluded to in our heating costs this past year, but in order to get that done we have to pull together as a region, and here's the leadership again with someone who is spearheading bringing New England together and beyond. But it's not just New England, but I want to underscore New England because we do have in the federal government twelve United States senators. That's more than any other region can boast, and we ought to be

able to take advantage of that and the twenty-one representatives of the House of Representatives so that we're able to have the kind of infrastructure plan that would be appropriate to support, as the governor pointed out, the new industry that is emerging, take advantage of the United States becoming a natural gas gamin for the world, but that doesn't happen without leadership. And so how important that the President in his State of the Union address again underscored what the governor was talking about and what the secretary is in the midst of executing.

Secretary Moniz, so great to have you here with us as well, and thank you for including and making Hartford part of your stop. You were in Providence earlier and on through Boston. But to put together both a comprehensive and strategic plan is vitally important.

As some of you in this audience know, I'm a big fan of T. Boone Pickens, but T. Boone has it right. It's abundant, it's American, and it's ours. Natural gas. Recently with events unfolding in the Crimea and concern about Russia, T. Boone published an article, and in his article, in his op-ed piece that he published, he talked about making sure that we place America first and how this

race to try to become an LNG-exporting country is putting the cart before the horse. America first. Develop the strategic comprehensive energy plan that we need. Start at home with the infrastructure that we need. And while we're talking infrastructure, how about having a vote in the United States Congress so we can support not only this region but every state in this great union of ours so that we can put the country back to work, so that we can utilize and harness the great resources that we have. And that's why the secretary's trip, not only here to Connecticut and throughout New England but around this country, is so vitally important, so that we can begin to understand what T. Boone and, frankly -- and Elizabeth knows this because we had Chairman Shuster up here as well who had the temerity to say, "Look, infrastructure is not Democrat or Republican. It's American." And it's about putting the country back to work. And as T. Boone says, when we're energy-independent, that will send the strongest message around the world and continue to serve as a deterrent and keep us at the seat of power where we need to be as it relates to energy. God bless you, and thank you. God bless America.

COMMISSIONER KLEE: Thank you, Congressman Larson. And, lastly, I would like to call up Congresswoman Esty. Thank you.

CONGRESSWOMAN ESTY: Well, thank you so much, Secretary Moniz, for joining us here. I hope you find us a little more collegial than our last meeting with the Science Committee.

You can ask Secretary Moniz about that endeavor.

Governor Malloy, we applaud you for your incredible leadership on this and so many other issues.

Commissioner Klee, I know it's not bear cubs today, but thank you for welcoming us anyway with your many duties here.

And to John Larson, my good friend and colleague.

I want to mention that we have our leaders here in the state legislature here, my friends and colleagues from the Energy and Technology Committee, Senator Bob Duff and Representative Lonnie Reed. Thank you for joining us, because your input is vitally important for us here today.

I would really like to applaud what this state has done and what our New England governors have done because it is incredibly important. As we have heard,

Connecticut is a small but a mighty state in terms of innovation, and the governor's leadership on these issues as part of a New England region is vitally important because we're going to hear more today about these challenges, about energy affordability, energy efficiency, energy security while preserving the environment. All of these are vital and important goals, and all of them need to be planned for and worked on in the state, regionally, and at the national level.

It's no surprise to anyone in this room. We are a state with high heating costs, and in fact I will tell you just earlier this morning I had a telephone town hall with seniors in my district. Two of the thirteen questions were about energy, one about high energy prices, and one someone deeply concerned about where this country is going on climate change and what are we going to do to show our leadership. So I can assure you, the folks I represent in the fifth district of Connecticut are aware about this every day when they pay their home heating bills and are aware of this every day when they think about the future of the world.

I want to applaud the governor for his leadership

in helping to lead the New England states in the governors' regional energy infrastructure initiative. This is going to be incredibly important for the infrastructure we so vitally need to ensure our energy security, to bring down those costs for our residents and for our businesses who also have to pay that high price, and that affects jobs in our region that we desperately need to retain, attract, and grow.

I want to touch on a few initiatives that we've been working on to note as we're aware, or you should be, the governor's work on energy issues here, including fuel cells in the state, microgrids and, as has already been mentioned, fleets of alternative energy vehicles with charging stations and the effort to expand and transport natural gas throughout our region. I'd like to touch on a couple of the issues I've been working on on the federal issues that tie in to our conversation today.

I've been working, taking up the good leadership of now-Senator Murphy, on expanding local renewable power. I introduced the Collinsville Renewable Energy Production Act, which is designed for Canton, Connecticut, which is trying to put back into play two hydrodams that are

over 100 years old, and this is an example of how we in Connecticut take our longstanding ingenuity and we put it to work in the modern world. And I'm hopeful with Senator Murphy -- and, actually, Senator Kane told me two weeks ago he would help me with this too -- we can get this not only passed in the House, which we did last year, but, hopefully, passed in the Senate too, to allow Canton to repurpose that hydrodam, those two hydrodams, and put it to work right now in our communities.

In the next few weeks I will be joining with Representative Chris Van Hollen, with John Larson and the rest of our Connecticut delegation in introducing a bill we are very excited about because it champions and expands and builds on the great work here in Connecticut, and that is the Green Bank Act. The bill would establish nationally a Green Bank to assist in the financing of qualified clean energy and qualified energy-efficiency projects. The bill is modeled after CEFIA here, the Connecticut Clean Energy Finance and Investment Authority, which is truly a model for the nation. The Green Bank would be supported with $10 billion in green bonds issued by the Treasury and will provide loans, loan guarantees, and other forms of

financing support. The Green Bank would be issued a twenty-year charter and would be authorized to co-fund the creation of state-level green banks with low-interest loans of up to $500 million for states that would be matched with federal funds.

I cannot stress enough what we have learned in the last few years about the importance of predictable funding from the federal government to make projects like this work. I'm a strong supporter of robust federal funding for the Department of Energy, something Secretary Moniz and I discussed two weeks ago when he appeared in front of the Science, Space and Technology Committee, and it is why I'm fighting so hard for basic research and development. That is critically important in this area, both on the efficiency side as well as on the alternative energy side, and that is part of what is at stake in the budget battles in Washington right now is this fundamental commitment in this country. Are we going to support -- does the federal government have a critical role in supporting basic research and development? And I think the answer in this state is clearly emphatically yes.

Finally, I'd like to touch on some very real

concerns which have been raised somewhat here today about energy resiliency and the security of our power grid. We saw that right here in this region with several storms. But we have also seen it with the tax on the power grid in this country. We've had hearings in Washington, including the Science Committee that I'm a member of. And this is going to take enormous work, state level, local level, with our colleagues in the energy distribution and transmission and generation business to keep us safe from cyber attacks. This is something that we will need to be working on for long-term security. It is a national security issue and is something I know the governor takes very seriously, having dealt with the reality of that here in this state.

Again, I want to mention how many of the companies in our state are deeply aware of the importance of energy to this country's future. I was at DRS Technologies in Danbury just last week, and as they look at a world which perhaps has the Defense Department budget moving and changing, we had a discussion about the possibility of adapting their technology, their sensors, their expertise and putting it to work for safer, cleaner energy and microgrids and distributed energy in the United

States. So I think we need to be very aware this is about affordability of energy for the folks I represent, the governor represents, John Larson represents. But it is also about encouraging a future, an economic future, for this state and this country that is clean, that's renewable, that's vibrant, and that's innovative.

So I want to thank you again, Governor, for your leadership.

Thank you, Secretary Moniz, for your listening around the country and in this critically important region about how we can work together for a brighter energy future. Thank you.

COMMISSIONER KLEE: Thank you, Congresswoman Esty.

I believe we now still have a little time left to take some questions from you, and I'm going to bring Fred back up, today's facilitator, to sort of lead that segment of the meeting. But I would like to close and say on behalf of everyone here at the Department of Energy and Environmental Protection I want to thank you for joining us today. It's great to see such a large audience from across our state and representing such a wide array of groups. So

I know you'll benefit from your time here today, really interesting topics, and that your contribution will be of real value as the Department of Energy moves forward with this Quadrennial Energy Review. So thank you. I'll turn it to Fred.

MR. HANSEN: We have time for maybe one or two questions. Are there any questions that people would like to ask? Okay. I'm going to move on if there aren't any.

Okay. Well, thank you very much, panel.

(Discussion off the record.)

MR. HANSEN: I'm going to ask everyone to just bear with us while we change out the panels. But I would like to ask the members of the Infrastructure Needs for Gas-Electricity Transmission, Storage, Distribution to come up, that panel, as this other panel leaves.

(Discussion off the record.)

MR. HANSEN: While they're getting set, I would just like to give you some sense of the process. Each one of the panelists will get a chance to speak, and then I'll ask them some questions, and the panel will leave, and we'll get the next panel. That's kind of how it's going to go. I would ask you to hold your applause until all the

panel is complete, and then we're switching off. That will help us expedite things on that.

(Discussion off the record.)

PANEL 3: INFRASTRUCTURE NEEDS FOR GAS-ELECTRICITY TRANSMISSION, STORAGE AND DISTRIBUTIONS

MR. HANSEN: I'd like to introduce our panelists right now. Gordon van Welie is president and CEO of ISO New England, Inc. Thomas May is chairman of the board and president and CEO of Northeast Utilities. Tom King is president of the National Grid US. And Bill Yardley is president of the U.S. Transmission and Storage, Spectra Energy.

Gordon, would you like to start us off?

MR. VAN WELIE: Sure.

MR. HANSEN: Oh, I'm going to ask you also to remember that -- try to stay to the five minutes so we can have a robust discussion at the end.

MR. VAN WELIE: Can you hear me yet? There we go. Well, thanks very much for the invitation. I really appreciate the secretary coming here this afternoon with the DOE to create this forum. I think it is a vitally

important forum for us. We've got some serious problems to solve in the region and, quite frankly, we need the help of the secretary and all the political leaders in this region to get this done.

Several years ago we recognized that New England was facing a significant shift in the region's electrical energy production due to the retirement of a lot of older non-gas-fired generation and a significant increase in gas-fired generation and both grid-scale and "behind the meter" renewable energy. Along with that shift in electricity production we see a noticeable decline in many of the power system resources in New England leading to even greater reliability challenges, and with the major retirements of these non-gas-fired power plants starting this year and infrastructure improvements years away, we only have to look at the past two winters to understand the precarious position we're in for the next several years.

I mentioned that New England's experiences of the past few winters clearly demonstrate the challenges we face. As we expected, during this past winter New England faced severe natural gas pipeline constraints that drove gas and electricity prices to record levels. During times

when the gas pipelines are constrained we depend heavily on all non-gas-fired generation in the region, and in particular oil has become a critical fuel during the winter.

To address the reliability concerns we experienced last winter, the FERC approved a $75 million Winter Reliability Program to ensure that oil generators in New England had adequate fuel supplies beginning this past December, and as we had anticipated during times of high demand for natural gas, prices for natural gas increased significantly, leading the region's oil-fired power plants to become baseload energy producers. The additional oil resources the region procured proved critical to helping us operate reliably this past winter.

These high natural gas prices are symptomatic of the region's severely constrained natural gas infrastructure, and the problem will only get worse unless this infrastructure issue is addressed. To give you a sense of the magnitude of these costs, the energy market and the wholesale electricity market for the period of December 2013 to February 2014 was $5.05 billion compared to $5.2 billion for the entire twelve-month period in 2012

when we had relatively mild weather and the pipelines were unconstrained.

Unfortunately, this winter revealed that the pipelines into New England are even more constrained than what we had initially understood. While natural gas generators make up about half of New England's total generation capacity on an annual basis, on many cold days this winter much of the gas-fired fleet was idle because of the lack of gas pipeline infrastructure to meet the demand of those generators.

In order to achieve a more accurate assessment of these challenges, in 2012 we commissioned a study of the natural gas system in New England. Amongst its conclusions the study noted that New England's natural gas supply infrastructure is not adequate to meet the region's winter power generation needs over the next decade. A recent update of the study confirms that the gas pipeline constraints are even more severe than what was originally forecast in 2012.

We've made it through these past two winters by relying heavily on non-gas-fired resources, but as I mentioned previously, that landscape is changing rapidly

due to the retirement of approximately 3,200 megawatts of non-gas generators. The dominant new generation proposals in New England are gas-fired and wind-generator projects, creating an even bigger need to invest in additional gas pipelines to support gas generators and the transmission infrastructure necessary to enable the delivery of wind.

While more direct infrastructures are being discussed in the region, the ISO is also attempting to address the issue of declining performance amongst many of our power system resources due to inadequate fuel arrangements or lack of investment in maintenance and staffing. This presents a continued and worsening challenge to electrical reliability as well.

We believe the solution to this resource-performance problem is to make appropriate changes to something called the forward capacity market design that will create strong financial incentives for resources that take on a capacity obligation, to provide the system with required energy and reserves when the system is stressed. This will incent generators to make forward fuel arrangements and improve their performance. The proposal will also enhance revenues for efficient high-performing

resources, including oil generation, that performs well during critical periods.

We call this proposal "pay for performance," and we filed that proposal in January with the FERC. However, we won't see the resource performance improvements until the rules are implemented in mid-2018, and the pipeline expansion we are discussing likely won't be in service until 2017 or 2018 at the earliest.

A few moments ago I mentioned the possibility of specific infrastructure solutions in New England. As many of you know, in January the New England governors requested assistance from ISO New England to ensure that the region benefits from the additional pipeline and transmission infrastructure. The governors' proposal is a truly creative solution to address the energy challenges facing the New England region. We are appreciative of the governors' efforts and look forward to continuing to support their initiative as they work through the stakeholder process.

In summary, New England has a serious and growing reliability problem due to gas pipeline constraints, a growing resource performance problem, retirements of

non-gas generation, and a growing need to balance and deliver an increasing amount of the renewable energy.

I am thankful that the U.S. Department of Energy and Secretary Moniz personally took time to come out to New England today. I think it illustrates and showcases the problem that we have, and I'm hopeful that the QER process will help achieve a broader understanding of the challenges facing our region and even identify and possibly support solutions to improve our regional electric reliability. Thank you.

MR. MAY: Well, good afternoon, everyone. I was going to, as the CEO of the local utility here in Hartford, welcome all of the people from DOE and our elected officials, but they have all left but Commissioner Betkoski, who is from the Public Utilities Regulatory Authority of Connecticut, so welcome. No one else recognized you so I had to step up.

We all submitted and I submitted a prepared statement last Friday. So I won't repeat everything I put in that document, but let me summarize a couple of my concerns about the situation that the governor and the secretary and everyone else referenced this afternoon. And

it certainly is an opportune time for the Department of Energy to visit New England and discuss our energy infrastructure needs.

This past winter clearly exposed the weaknesses in our power markets caused by the constraints within our gas infrastructure. Gordon van Welie of ISO New England just described the situation very well. And we believe, as the governor said, that the impacts resulted in $3 billion of excess costs for our customers this past winter. And that's just in the four months, December, January, February, and March, the heating season. We do need to aggressively address this situation, and so I thank everybody for being a part of this discussion today.

Our New England states also have aggressive renewable and greenhouse gas emission goals that Gordon also referenced. We will not achieve these goals without nontraditional transmission investment and help from our neighbors to the north. We're working with our regulators and with the New England States Committee on Electricity, or NESCOE, which is the group formed by our governors that Governor Malloy spoke of earlier, to address our needs for this particular issue, the need for additional

infrastructure investment.

To put in a commercial, the Northeast Utilities is developing a 1,200 megawatt transmission line referred to as the Northern Pass Transmission Project from Canada to southern New Hampshire to bring clean, cheap hydropower to our market. The project will eliminate 5 million tons of carbon per year and provide a much-needed addition of dispatchable power for ISO New England.

The project's licensing process is currently before the Department of Energy in order to complete its review of the environmental impact of the project and to issue a presidential permit. We appreciate DOE's efforts to date and ask that you continue work to complete the approval process as expeditiously as possible. New England needs the line.

Northeast Utilities also supports the NESCOE initiative that calls for expanding the region's natural gas infrastructure to address the dysfunctional power markets that cost our customers $3 billion this last winter. While this appears to be a nontraditional solution, we believe that precedent does exist for regulators to intervene when markets are not working

appropriately. We've tried market-pricing incentives, and they haven't worked. And we cannot put our region's economy at risk while we continue future pricing experiments.

So with that, thank you all for participating in today's hearing, and I look forward to discussing New England's energy future with all of you and my fellow panelists. Thank you, Fred.

MR. KING: Thank you for the invitation and the opportunity to address this group. I certainly recognize both President Obama as well as Secretary Moniz for pulling this important leadership task force together to address the very important issues. And also thank you to the Connecticut leadership that was here inviting us.

National Grid owns and operates both gas and electric facilities networks across New England and New York. We serve about seven million gas and electric accounts. That means we're touching fifteen to sixteen million people every day. Therefore, we clearly understand the importance of regional coordination, and this is a very important conversation for us to be having. We have an extraordinary opportunity in front of us. As you heard

from the opening comments as well as from both Gordon and Tom, infrastructure is required to address these, and it's time to take action. We've been talking about it a long time. It's time to move forward and put the infrastructure in place.

Customers not only want the solutions that are both economic as well as environmentally positive, they have to be resilient. Resiliency is critical, I think, at this region as well as our entire region we have been serving. We were directly hit by Sandy as well as many other intense storms over the past period, and it's time to ensure that as we develop the networks of the future they're also resilient.

I'm going to focus on three key areas: gas and electric interdependency that you've heard about today, the gas distribution pipeline infrastructure. And methane reduction is the second area. And I will talk about the utility of the future very briefly.

First, on the interdependency between gas and electric, over half of New England now is served by gas and half of Massachusetts homes are now heated with gas. For the period just from 2008 to 2012, National Grid converted

oil to gas heating for 46,500 new customers. Since then -- this is from 2008 to 2012. Just since 2012 we've added another 19,700 oil-to-gas conversion customers to our network. This combined with the ever-increasing aspect of gas-fired generation to the market area brings this issue even closer. The important piece about the oil-to-gas conversions is that in itself reduces carbon emissions by 50 percent. And then I'll address the infrastructure topic a little bit later on the gas distribution system.

So as we've already identified firsthand experience this past winter with the polar vortex, and you heard the impact on cost both from the governor as well as from Tom and Gordon. To bring that down to an average rate increase, that's a 35 percent increase in the commodity bills, the commodity side of the bills, year over year, very significant impact. In addition to that, just within the Boston area there's roughly a $250 million a year constraint on the transmission system. So between the gas as well as the electric, we have to build new infrastructure, and it has to be built very, very soon. There are investments like the NEEWs transmission projects that both National Grid and Northeast Utilities are

undertaking. These not only strengthen the networks, build resiliency, they also reduce congestion, alleviate customer cost, and create the opportunity for cleaner generation resources into the area.

Further, to meet the clean energy goals as defined earlier today, which is certainly something we're committed to, additional electrical transmission will have to be built. Therefore, we know that. You've heard it clearly. It's time to put the right markets in place and go pursue it. Just recently we have reached an agreement for an undersea cable to connect with Deepwater Wind. There is initial phases of offshore wind for Rhode Island. It has much more expansion capacity, and we're building the transmission that will connect it and be ready to serve that. So in support of what you've already heard, we must move quickly to place effective market structures in place for generators, and we need to incent the generators that step up and hold firm capacity for transportation arrangements.

Further, National Grid supports also taking a position in long-term pipeline capacity commitments. As you know, we're a significant gas distribution system

within the Northeast, and we believe that these commitments also have to be coupled with the right legislative and regulatory mechanisms in place to ensure that the customers are protected as this pipeline capacity is added.

Now moving to the second topic, that's the downstream solutions on the gas side. A critical part of the issue within our networks within the Northeast is we have an aged infrastructure. So we have a significant amount of older infrastructure that fundamentally needs to be replaced. This is not only an opportunity to reduce methane emissions in the market area. It's a public safety issue, and it provides economic and environmental goals and objectives. We need to advance leak-detection technology, and we need to drive regulatory innovation to ensure that we accelerate the pipeline-replacement investment recovery.

I'll offer an example of just one state that we operate in and how significant this has been: Rhode Island. We have over 3,200 miles of natural gas mains within the Ocean State providing gas service to 257,000 customers. With the support of the Rhode Island Public Utilities Commission we have undertaken an accelerated pipeline replacement program. This "Distribution Integrity

Management Plan" boasts an ambitious strategy to replace 1,400 of the 3,200 miles of natural gas lines. By prioritizing the leak-prone pipe areas, we will replace it with more efficient plastic mains and services. These leak repairs have already dropped the emission leaks by 40 percent. Both leaks as well as emission reductions are by 40 percent by what we have already delivered on the program today. Our Rhode Island customers expect that we offer a safer, cleaner, more efficient system, and we're delivering on it.

In the same light, I'm also proud that National Grid is a founding member of the Natural Gas Downstream Initiative. This initiative is working with other gas distribution companies to work to manage methane reduction from infrastructure operations. We also have identified the opportunity to accelerate investments in modernizing the infrastructure, promote operational excellence, and utilize advance technologies.

Finally, I'd like to address the utility of the future. We have a program that we have named Connect21, and it's about designing, building, and operating an energy infrastructure that's responsive to the 21st century needs.

At the heart of it is a framework that links the customer needs and policy goals with technology and market solutions. It starts with putting the customer first by equipping them and informing them with the information that customers can then make efficient energy decisions with. By providing the options about the sources of electricity, for solar, wind, a stronger market for renewables, as well as the most efficient way to consume energy, we put customers in control. This enables the data and energy management to enhance the network with technology and with the innovation. And by opening up the networks to third-party providers, we bring the technology capabilities in to help customers more efficiently manage their energy needs. This only works with regulatory innovation that supports long-term infrastructure investment, rewards policy goals of resiliency, energy efficiency, and technology investment.

Thank you for listening to the comments from National Grid today, and we look forward to addressing all the issues discussed.

MR. YARDLEY: Great. Well, good afternoon. It's great to be here with everybody today, especially my fellow

panelists. Outstanding. Lest you think I'm the Texas pipeline interloper, I am a New England native. I went to school here, was born here, raised here, grad school here, and only was lured down to Texas a few years ago. So I have a great deal of interest in what happens here in New England.

So we'll talk a little bit about what Spectra does here in New England and the Northeast and nationwide. First of all, we operate about 20,000 miles of interstate natural gas pipelines, some crude oil lines, some storage nationwide, predominantly in the eastern half of the country, but also in Canada. And it includes the largest natural gas transmission infrastructure here in New England by virtue by the Algonquin system that runs up through from New Jersey up to Boston and through Connecticut and the Maritimes & Northeast Pipeline system which comes down from Nova Scotia into northern Massachusetts.

So a very important topic. I will say over the past several years we've invested more than $10 billion in sixty different midstream and pipeline infrastructure projects nationwide, including about $2 million to move more gas from the Marcellus region right up this region's

doorstep, closer and closer to the Northeast. And a lot more is needed. We've got about $35 billion of projects in our outlook over the next five years.

Certainly the winters -- this past winter has really shined a spotlight on this region, and it's very clear that this region is inadequately supplied with pipeline infrastructure. In fact, I'll go so far as to say our Texas Eastern system, which comes across Pennsylvania, is about 6 billion cubic feet per day. By the time it gets to New Jersey it's about 4 billion cubic feet per day. As it comes right through here, it narrows to about 1.5 billion cubic feet per day, a little less than that. So that infrastructure can be improved with the right contracting mechanisms. And certainly with over half of the electricity now, as the gentlemen have said, being produced by natural gas or generated by natural gas now, now is the time to make sure that we have the right contracting scheme in place.

Just as an example, we recently built a 16-mile pipeline into New York City to de-bottleneck that area. Before we built the pipeline -- it just went into service last winter. So two winters ago the premium that New York

City paid versus its neighbor was 63 percent. Last winter it was 16 percent. So de-bottlenecking does make an enormous difference to a region. We're doing the same thing here. So the Algonquin Incremental Expansion Project is one that we've had on the books for a little while. It's subscribed to by almost every major gas distribution company in the region, including National Grid, including Northeast Utilities, City of Norwich, and UIL, so all the major players here. But it's just gas utilities, and until we find a way for the electric generators or some proxy thereof to sign up, the generation issue isn't going to be going away.

So a lot of things are necessary for this to happen. I mentioned the New York project. It took us four years to get that project permitted. We certainly would like to see a more expedited time line. In fact, we noted that the Federal Energy Regulatory Commission back in '05 had an effort to streamline the process and, in fact, unfortunately, the process just got a little bit longer, and it keeps getting longer as we move through with all this infrastructure being proposed.

So I look forward to that, to the discussion, and

I'll just leave it there. My prepared remarks, I think, have been distributed.

MR. HANSEN: Thank you. Let me ask you a few questions. Let me start out with a general question of basically we're here to inform the QER. So do you see a federal role for helping addressing New England's infrastructure needs? And think about executive, legislative, administrative options. So, Gordon, we'll start with you.

MR. VAN WELIE: Sure. I think there's multiple roles. The one role that the DOE, I think, is doing a good job of now is putting a spotlight on the problem. I'm not sure the DOE specifically can solve this problem, but I think there is a way that the FERC could help us solve the problem. And if they need legislative help, there's another avenue as well.

The basic problem is that when we restructure the industry, sort of look at the way the industry worked and still works in other parts of the country, like Florida, for example, Florida is highly dependent on natural gas. They don't have the issue that we have today. They really only have, you know, solar, nuclear, and natural gas. If

they need to build new gas pipelines to supply generation demand, Florida Power & Light goes to the state regulator and asks them to the approve the flow-through of those costs. That linkage got broken when we restructured the, I'll say, electricity markets. Without getting into a long discussion about that, the consequences that the generators in the wholesale electricity markets, although fairly short-term focus, as Bill will tell you, he's not going to build a pipe unless somebody is prepared to sign up for a long period of time. And that's the problem that has to be solved. And it's going to take some creative thinking, I think, here in New England and possibly with the FERC to get this done.

MR. MAY: I would agree. Obviously, DOE can play a key role in not only shining the light on the process but bringing together the parties that we need to address this. It is, as Tip O'Neill said, all politics are local, and this is a local issue in New England. And we hang together, the six states, but sometimes not so much. So anything you can do to encourage that and convene these kinds of things between the six states to bring a common focus on the issue would be terrific.

As Gordon said, FERC is our key. I personally don't believe and our attorneys don't believe that we need to have legislation. We think the Federal Power Act is broad enough for them to act. But we are going to need to intervene in the markets when they don't work, and that means a special kind of tariffing that had been suggested in capacity managing that had been suggested by this committee that we refer to as NESCOE in order to bring the powers to bear and get the commitments we need to have the pipelines expanded.

MR. KING: I think the only thing that I would add to that is I think we've got a really unique situation right now with the New England governors' initiative that have come together and really appear to be strongly aligned with the infrastructure requirement. I would seize on that opportunity, both with DOE, ensuring that we're coordinating with the states, but ultimately to push through the -- help us collectively push through with the mechanisms we have in place to see if we can get something done now.

MR. YARDLEY: I'd just add that the good news is that in a lot of our dialogue with FERC I think they're

really willing to be helpful, and I think the DOE shining the spotlight on this issue is helpful as well. So a lot of good proposals have gone forward. We think we need to adopt one, and I think we'll find a receptive audience.

MR. MAY: So thank you for bringing the Quadrennial Task Force here to New England to start this discussion. The timing is perfect.

MR. HANSEN: A lot of you mentioned the idea of trying to stimulate investment and restructuring or changing the markets a little bit through stimulation through a market intervention. It seems like a very complex issue, a lot of different players involved, a lot of different perspectives involved in that. What is the path forward that you see for getting all those perspectives together and sort of developing a solution in the light of that? At least what are some of the key elements of that path forward that need to be in place in order to make that happen?

MR. VAN WELIE: So I'll just jump in, and I'm sure I'll light the fire and it will start burning.

You know, I think the first problem that has to be solved is that generators need to have a strong

incentive to make sure that they firm up their fuel arrangements, and they need to feel like they can get paid for taking on those long-term commitments.

The problem we've got today is that, particularly when it comes to gas generators, they essentially are buyers of spot gas, and to solve this problem we need somebody to go out there and make a long-term arrangement. And whether they're making long-term arrangements to put oil in their tanks or signing up for LNG or signing up for a strip from the next Spectra pipe, we're ambivalent to that.

So the thing that we want to get out of this arrangement is to make sure that when we call in a generated run they've got fuel to burn. We've made some changes and proposed some changes in our capacity market because that is the element of the market that has long-term payment associated with it. We've made some changes, proposals to the FERC to change the incentive system to drive generators to firm up their fuel arrangement. The question is, though, will that be sufficient to get generators to sign up for new gas pipelines. We've done the analysis, extensive analysis, on

this, and today the most cost-effective thing for a gas generator to do is to put in dual fuel capability, because the cost of dual fuel is less than signing up for a long-term pipeline.

So now I think this is where policymakers come into the discussion, because ultimately that's a solution from a reliability point of view, but it still results in very high prices during the winter because oil is expensive. So if you have to wait for gas prices to get up beyond $20 per million BTU so that you can burn oil, you're going to have the billion-dollar problem we were talking about in the wholesale energy markets.

There's also an environmental impact. So I think policymakers in this region are very focused on trying to lower CO2 emissions, and if our solution to reliability is burning oil in the winter, that's not sort of helping us down that path. And I think that's where sort of the policy initiative makes sense to me, that effectively what the states are doing is buying down the cost of burning gas instead of oil by making this investment together with whomever they need to sort of get the pipelines built.

MR. MAY: You started off by saying there's lots

of parties, and I agree with you. Sometimes too many come to the party, and special interests start to dominate the conversation. I think we have a good start in that Governor Malloy and the other governors have put this committee together to start to look at this issue regionally. Gordon talks about the need for long-term commitments.

I think we have to recognize where we are in the history of deregulation in our country, which has the generators in very poor financial shape. In this region we've had two large companies decide to pull out of it because they can't make money. These aren't the kind of institutions that are going to make twenty-year commitments to anything. And therefore we're left with the dilemma of hoping for something that's just not going to happen in the near term.

That's why I believe and in my prepared remarks I suggested that, like we do in so many times when we're in crisis, we need to lean on the local utility companies that have strong balance sheets, and they're the ones that can make these commitments with the right regulatory schemes and incentives in place to get this done, get these

commitments done, get the adequacy of our infrastructure back on track and get our markets normal and our economy back to a place where we're not dumping every year $3 billion onto our consumers' bills.

MR. KING: The thing I would add to that is that this is -- I think this is an economic issue as well as an environmental issue. As Gordon points out, the dual fuel puts you in a position of oil. You heard certainly from Connecticut this morning on the importance of clean resources, and certainly most of the states that we're operating in have the same objectives. So ultimately I think there has to be a value associated with firm capacity, whether you're a generator or a local distribution company. The sooner that we make that value a critical part of the market structure, the sooner, I think, we're going to get the infrastructure built.

MR. YARDLEY: I'd just add that I cringe when I hear about oil backup. I appreciate the efficiency of it. I appreciate that. But I do look at the map of the U.S. and the resource base that we have for gas and recognizing that it's so close -- it's right at our doorstep -- and we have conduits that actually go there. They just need to be

improved. And we're extremely familiar with both the local distribution companies for gas and electricity. So as Mr. May points out, we have a very long sixty-year contracting history with those entities, not so much good luck with the generators, honestly. So I agree. I think there is a nice opportunity and some symmetry there.

MR. HANSEN: Well, that kind of leads me to my next question, which is the theme of regional coordination. The theme of partnerships, public/private partnerships, is very strong here in moving toward a solution. I guess I'm wondering what would you identify as the most significant barriers to maintaining those partnerships, and do you see a role for the federal government to help in addressing those barriers?

MR. VAN WELIE: I think one of the issues that the states are working through is it's a thorny problem. It comes up every time we need to make infrastructure investments, and that's cost allocation. Who should pay for what? And so we have got a fairly -- it's a creative solution, but it's also a complex solution that is being proposed by the New England states, which is a combination of transmission to enable renewable energy and natural gas

pipeline infrastructure. And so I think the fact that all those initiatives are sort of in one large package deal is what makes it complicated in terms of dealing with cost allocation. The states need to work through that. And, you know, I think the reality of it is they're coupled at this point. Is it possible to uncouple them or not? I don't know. We've focused on the gas pipeline issue. That's the most immediate issue that we've got.

The longer term issue, I think -- and this is part of what's caused this to be a complicated discussion -- is the fact that many states in this region, Massachusetts in particular, have made a commitment to reducing CO2 below a certain level by 2050. So there's this dilemma of how do you sort of deal with both the short-term objective as well as the long-term objective. So those are the dynamics that people are dealing with. And I'm not sure that the DOE can specifically help that because that's something that the six New England states need to work out together.

But the pipeline part of this really is something that I think we need to move along as quickly as we can. I think the transmission side of things we've got more time

to work through those issues. But the pipeline part of this I'm really worried about because we -- I said this in my opening remarks. We're in a precarious operating position. We can't survive the loss of a large nuclear power station or a large transmission line from Canada during a cold period like this past winter without really dire consequences. And we have to live like that for the next three to four years. And it's only going to get worse going forward. So we really do need to step up and solve this problem.

MR. MAY: You started the conversation with barriers, which is how many parties that were in and seeking for the perfect solution where everybody agrees unanimously. I think that Gordon references the FERC's authority to allocate costs in a traditional way when we're dealing with reliability, and they're now going one step further to deal with it in achieving renewable goals. I think this is just taking it one step further, and we need FERC to -- they're the ones that can break through these barriers. They're the ones that have the authority to allocate if we've got a majority opinion rather than a unanimous opinion. And they can allocate across New

England to everybody, recognizing that this market -- we all live and die with it. We all either suffer or benefit from an efficient operating market. So we are tending to look toward FERC to help us in getting through these barriers.

MR. KING: Well, I'll go a little provocative on you. Everything we've talked about today is not new. We've been dealing with this for years. We just happen to have come out of a winter that really exacerbated everything that we've already known. And my worry is we're here again a year from now and nothing happens. So I think probably one of the bigger roles that you could play is to continue to be very, very noisy about it, and the noise will get the region moved. Because this is really -- it is a public/private issue, and it is lots of stakeholders, as Tom mentioned, lots that have to be dealt with, and the more that this is on the top agenda of DOE and continue to ask once a week, "Where are you? Where are you?" very, very helpful.

MR. YARDLEY: I'll echo that. I agree 100 percent. I'll add one more thing, and that's the, yep, we're here talking this. We've got some nice projects for

gas distribution companies coming in 2016 and 2017. But the fact is we don't have anything in the pipeline for electric generation, and it's going to take four years. So some assistance that we can get is some certainty with regard to the permitting process and some streamlining that says maybe it doesn't have to take four years to get this done.

MR. HANSEN: Well, we have time for one last question, and I'm going to go back to a general question and say do you have any closing advice or thoughts for QER, anything you would advise or talk to them about moving forward, advice?

MR. VAN WELIE: You know, there was a point several years ago with the DOE that I think was quite effective at spotlighting transmission congestion, and I think you've got, according to -- you know, in light of the comments that my colleagues made here, you can sort of put us on the radar screen as much as you can through a similar mechanism with regard to this infrastructure deficit that we have.

MR. MAY: This is very serious for the region. I think we need to stay focused on it. And I agree with Tom

and Gordon. Anything you can do to keep the pressure on and keep this in the public's domain, because my biggest fear is the spring has sprung, rates go down, and people forget it, and again next winter -- Tom mentioned how quickly he's hooking up customers. We're doing the same thing in our gas businesses, which means there's less and less available each year to run our power plants. As Bill would tell you, we haven't brought any capacity, new gas capacity, into this region in twenty years. It's about time we do something about it, and we've got to find a solution.

MR. KING: So to build on that -- and this isn't a "cry wolf" situation. I think we've watched it deteriorate year over year and got very close this past winter. I would suggest that we're near a crisis, and if it's not addressed, then we're going to have a problems heating homes and keeping the lights on. So it's that significant of a priority.

MR. YARDLEY: I couldn't say it any better. Just keep the pressure on.

MR. HANSEN: Thank you very much. Now we can applaud. Thank you very much.

Okay. We're going to switch panels again.

(Discussion off the record.)

PANEL 4: INFRASTRUCTURE NEEDS: CHALLENGES AND SOLUTIONS

MR. HANSEN: If we could start up again, I'd like to introduce our next panel. This is the Infrastructure Needs: Challenges and Solutions panel. We have Glenn Poole, manufacturing support manager for energy, Verso Maine Energy, LLC; Lawrence Reilly, principal of Rosewood Energy Consulting, also chairman of Vermont Electric Power Company; John Bilda, general manager, Norwich Public Utilities and past president of Northeast Public Power Association. We have Peng Zhang, assistant professor at University of Connecticut -- did I get it right?

MR. ZHANG: Close.

MR HANSEN: Close? Okay. Thank you. -- and Rick Terven, executive vice president, United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States, Canada, and Australia. So would you like to start us off?

MR. POOLE: Thank you for the invite. My name is Glenn Poole, and I'm the energy manager for Verso Paper

Corporation. Verso has three paper mills. We make lightweight coated magazine and catalog paper, and we supply about 30 percent of that market in the United States. Of those three mills, I want to focus on a couple of them that are in Maine.

We have two mills in Maine: one on the Androscoggin River and one in Bucksport, Maine. Between those two mills we have about 1,600 employees and about 150 million in annual payroll, which is a lot in the state of Maine. At those two mills we also have 550 megawatts of generation. About 325 megawatts of it is natural gas. There is about 30 megawatts of hydro, and the remainder is steam-fired generation. Much of the steam is from the natural gas combined-cycle generation. We also supply about just under 100 megawatts of demand response to the New England grid. So our major fuels that we use in the paper process are natural gas and biomass. Those are the two largest fuels.

At our two mills in Maine we've eliminated the use of coal and almost entirely eliminated the use of oil at our two mills. And over the past decade or so that has reduced our emissions by well over 80 percent. In the

meantime, we have increased our generation by over 50 percent. We've really done that by the installation of natural gas-fired combined-cycle generation with cogeneration, and that's been about a $350 to $400 million investment to install that equipment.

In that combined-cycle arrangement, the fuel is effectively used three times. You use the natural gas to make power. The exhaust is used to make steam. Then the steam is used to make power and paper. So it's a very efficient process, in the 60 or 70 percent range.

Three or four years ago we took the DOE Better Plants Pledge, which is a pledge to reduce energy use intensity by 25 percent over ten years, and we met that goal this past year.

Well, we have heard a lot today about what's happened in New England, you know, with gas prices. We're just a short snowmobile ride away from some of the cheapest gas in the world, really, in Marcellus. But we're short by about 2 Bcf of pipeline to be able to access it all the time. The first-of-month prices for natural gas doubled last winter, and by "last winter" I mean the '12-'13 winter. We're still having winter in Maine, and it doubled

again this year.

So you've heard what consumers are paying, 3 billion or so extra. On some days that's 100 million in one day. So what's happened is industrials are shutting down and putting people out of work. Our mill in Bucksport was not able to revert to coal or oil so we were shut down for the better part of January and February, putting 600 people directly out of work along with 3,000 or 4,000 other people that supply goods and services, whether it's wood or shipping or trucking or whatever. So there were a lot of people out of work at that time in those two months. Not a good time to be out of work in Maine. Groveton Paper also shut down. Huhtamaki Fiber also shut down, and many others as well.

The consumers in Maine have not been fully hit by this yet because there is a three-year rolling standard offer, but it won't be long, and it will come at the same time that increase in transmission costs hit them. We don't see any relief in sight in the next two or three winters.

This is a classic problem. We're bleeding profusely, and we need a tourniquet, and I think you know

you can't wait very long to put a tourniquet on. It's a desperate situation. Jobs, the economy, and even, as Gordon pointed out, the security of the grid is at stake. Everyone knows what has to be done. The problem is location, location, location. The solution is pipe, pipe, pipe. We can't solve the problem ourselves. FERC has got to step in and make this happen. And as other people have said, the DOE just needs to persuade them that it's a critical situation and help make it happen. Thank you.

MR. REILLY: Thank you very much. I would like to thank the Department of Energy for having this hearing and inviting me to offer a few comments today. By way of background, I should mention that VELCO, Vermont Electric Power Company, or VELCO, was established in 1956 when Vermont's local utilities joined together to establish the nation's first statewide transmission-only company.

Electricity, as everyone in this room knows, is critical to our economy and the quality of life of our citizens. We tend to focus, as we should, on the issues associated with having too little transmission capacity because the consequences are so clear: degradation in service quality, higher power costs due to congestion, the

inability to meet all customer needs at peak times and in the extreme blackouts.

Although we can never compromise on meeting reliability standards, our electric transmission grid also needs to be affordable. No one has perfect vision of how customer demand for electricity will change over time, but we need to be careful not to consistently err on the side of overbuilding transmission. It may sound funny coming from a transmission-only company, but we really believe that. There are very real costs associated with having too much transmission: economic costs, because those facilities are included in the rates paid by customers; and environmental costs associated with the construction of new facilities.

In terms of evaluating future transmission infrastructure needs, it makes sense, both economic and environmental sense, to thoroughly consider nontransmission alternatives. Striking the balance between too little transmission infrastructure and too much is not easy. We suggest a three-prong strategy to help address this question and help ensure that there is adequate transmission capacity in place at a reasonable cost to

customers. Specifically as a region we suggest that we should make sure we are, one, implementing all cost-effective energy efficiency; two, expanding to the fullest extent possible the amount of price-responsive demand on the system; and, three, fully integrating the increasing volume of distributed energy resources into our resource-planning efforts. I'll describe each of these points briefly.

First, with respect to energy efficiency, plain and simple, if we are not implementing all the cost-affective energy efficiency that we can, we're going to build too much infrastructure. Energy efficiency, as we've heard this morning, is the most cost-effective way to meet customer needs from both an economic and environmental perspective. You don't need infrastructure to meet a load that doesn't exist. And as I will discuss more fully later, targeted energy-efficiency efforts can play a key role in deferring or eliminating the need for new transmission facilities. I'm not talking about the sorts of transmission facilities that would import thousands of megawatts of new power into the region but just the general reinforcement of our grid. I think most would agree that

New England is a leader in energy efficiency, and I would suggest that other regions could benefit from considering the approaches that have been implemented here.

Second, in terms of price-responsive demand, the vast majority of electric consumers in New England pay for electricity on a per kilowatt-hour basis that does not change with the changing costs for electricity in the wholesale market. Because of this dislocation, most customers have no incentive whatsoever to reduce consumption when wholesale power costs are high or shift usage to times when costs are low. Thanks in large part to a $69 million Smart Grid Investment Grant from the Department of Energy, Vermont now has smart meters in place for more than 90 percent of its customers. This investment is already providing benefits in terms of improved customer service and reduced labor costs. But more needs to be done to fully realize the potential of this new technology and increase the use of price-responsive load to defer or eliminate the need for construction of new transmission facilities. As a suggestion, although it's already an area of focus for DOE, we suggest an increased emphasis on studying how best to influence or change customer behavior

and evaluating technologies to automate demand-response activity.

Finally, with respect to integrating distributed energy resources, New England, like much of the country, has experienced a significant increase in the number of distributed energy resources. There can be no doubt that these resources provide real value to the grid. The challenge is determining that value and then integrating it into the regional transmission planning process lead by ISO New England.

Notwithstanding economic incentives to the contrary, in 2013 VELCO, in collaboration with other entities in Vermont and ISO New England, avoided a $157 million transmission upgrage. This was accomplished by targeting investment and energy efficiency, incremental net metering, and incremental renewable distributed energy resources to specific geographical locations. If savings such as this are possible by targeting investments to specific areas in Vermont, it stands to reason that significantly larger benefits could be achieved if a similar approached were applied more broadly in New England. I suggest that as part of the Quadrennial Energy

Review, DOE consider expanded emphasis on nontransmission alternatives as you deliberate.

Thank you for the opportunity to present these comments, and I look forward to questions.

MR. BILDA: Thank you for the opportunity to be here this afternoon and share my view. I operate one of the 90-plus municipal electrical utilities around the New England region and the only local natural gas distribution company in the state of Connecticut. So what I would argue, I have a real, real local view of how the systems operate here. Because when I stop at a coffee shop in the morning to grab a coffee, everyone knows who I am. And I get asked two questions very frequently: One, "Why did my lights go out last night?" And I can answer that question quickly because I know what happened and in confidence I can say how long until it's going to be fixed. And then I'm asked, "Why does my bill cost me so much?" And the answer to that question becomes very much complicated and irrational, because I have to tell people that the price that you're paying in that bill has nothing to do with the cost of producing the energy. The price is set every five minutes, and that price can swing on a very hot day from

$35 a megawatt hour to $350 a megawatt hour, and you're exposed to some of that, and you're going to have to pay for that, and that on those very hot days, the most costly and the most inefficient generators set the price that all the other generators get paid. So I would argue that, you know, there are generators making a lot of money in the way the markets are structured right now.

And then I go on to explain to a retired senior citizen, Don, who is 84 years old, who spent 46 years of his life working in a coal-fired generator down in Montville, Connecticut, that has since been retired for a bunch of good reasons. And I explain to him, you know, how all that's been replaced around New England with natural gas-fired generation. It's cleaner, it's more efficient, it's going to work better, but there have been no pipelines built to supply these generators with the natural gas. There has been a huge mismatch as a result of the lack of long-term planning. And in my mind I think we're still going down that path today. And with these gas generators, when you can get the fuel on a day where things might be tight, you can pay anywhere from three years ago $1.60 a decatherm from a pooling point at Henry Hub up to the

Algonquin market as here, $1.60 three years ago to $14 now, and at the same time the price of that natural gas isn't really what it costs to produce it at this abundant shale gas place. That price is set on Wall Street with marketers and speculators. So the cost element is not included in that.

As tough of a winter as it was this year, there was a warm Sunday when the temperature did peak above 60 degrees, and on that day Algonquin Citygate was $88 a decatherm and the LMP was 350 on a Sunday. I don't know and I can't have anyone answer the question in terms of where did all the money go. So when I explain all this at a local Rotary club or to the chamber of commerce to a lot of smart business people who work real hard to keep their businesses running, they either don't believe me or they say, "This is nuts. You've got to do something about this." So that's why I'm here today and thanking everyone for this opportunity.

Because here's what I think: I agree with everything we've heard about needing to increase the pipeline capacity coming into this region, provide us access to the abundance of natural gas supplies. But the

devil's in the details. We have to be very, very surgical about how we go about who pays for that, who owns it, and who is going to manage all this capacity that needs to get billed out, and it needs to be done in a hurry. Because last year when the Algonquin system hit its peak, which it never did before, was in March, not January this year. And a little community like Norwich got all its gas, and we only paid a buck and a quarter to move it from the Gulf of Mexico to Greenville, Connecticut.

A second piece, I think, is that we need to reinstitute some long-term thinking in an integrated resource management plan. These five-minute price signals and, you know, one-year capacity auctions are not going to cause this high capital investment in generation. There is no other market that works like that. The investors have too much financially at risk. And I believe if this investment doesn't happen and generation isn't built, you know, the reliability of the bulk electric system is going to be at risk also.

The last thing is just that I think we need to do either wholesale changes with the ISO New England or begin to phase it out. Because if you were measuring performance

based upon its mission and what it is today, I would give it a fair rating. But if you were to measure the performance in terms of what it costs the consumers and what it has cost businesses here in New England, there is no one looking out for the middle-class, hard-working American that's paying all this bill. They continue to struggle and get the squeeze. They have to be part of every single bit of the solutions that we're working hard to put in place. And those are my thoughts. Thank you.

MR. ZHANG: Thank you. I really appreciate the invite from DOE for me to talk about the topic of microgrid for enhancing power system resilience and efficiency on behalf of the power team at the University of Connecticut.

Microgrid is not a new concept. It had been studied for years, and also there are some real microgrids operating in the field. For example, at UConn we do have a microgrid in the Storrs campus with a total capacity of 25 megawatts mainly supported by the co-gen plants. As you all probably still remember, in 2011 we had two major storms that caused certain power outages in the state, and what happened at UConn at the time, actually, we still had our lights on, and we didn't lose our power supply for even

one minute. The reason is because we do have a microgrid that supports our power supply. Also because of UConn's microgrid we were able to survive the 2012 Hurricane Sandy. So we didn't lose our power on the main campus.

So, actually, I did a little bit of an estimate about the reliability of our campus power systems. If we assume that we have a very conservative availability of co-gen plant, like 98 percent availability, and let's assume that our utility has a very kind of low availability -- actually, it's not true. It's a very conservative estimate. Suppose reliability is 99.5 percent. Because of the power load connection of the microgrid to the UConn campus grid, our UConn power systems should be able to achieve a reliability of 99.99 percent, which means that you wouldn't lose power more than one hour per year.

So actually a more detailed study has been carried out so we have a study collaboratively with Northeast Utilities. We produced a report entitled "Reliability Evaluation of Selective Hardening Options." In the report we summarized the reliability benefits of microgrid for critical infrastructures within selected

Connecticut towns under different weather conditions. So we can see there is a lot of reliability benefit. Besides, microgrid can also provide a wide variety of technical, economic, environmental, and societal benefits to stakeholders and electricity users.

So one important benefit I want to mention here is ancillary services because the participation in local ancillary service markets, so if the market is created and operating well, then that will open up new opportunities for microgrid to meet the system obligations and achieve business proliferation for microgrids. So, for example, if the microgrid is seen in a grid-connect mode, it could provide different services such as frequency control support, voltage control support, congestion relief, the reduction of grid losses, and power quality improvement to help maintain the integrity, stability, and power quality of our main grid system, like distribution or transmission. So if the main grid has some problems or in emergencies, microgrid could offer black start capabilities to help pick up local load as well as providing a frequency voltage control to accelerate the restoration speed of the utility grid. So this is a very good benefit.

And, besides, microgrid has other benefits, as most of us already know. For example, it can better integrate renewability into the grid and it can stabilize distribution transmission grids. The reason is in the future we can envision that a lot of renewable resources and also ancillary load will be penetrated in the grid, and then system operators will soon find themselves closer to the technical limits of the power systems and they will be enterprising to find ways to the cost-effectively increase those limits. If we are able to accomplish this valuable generation and also add certain loads at the local distribution levels through the microgrids, then that will greatly reduce the stresses for distribution and transmission and increase security and the adequacy of the power infrastructures.

So also a microgrid can provide a peak load reduction and also provide a good platform to realize the demand-side management for power systems. So currently, as we all know, a few microgrid pilot programs have been developed to test and validate the benefits, efficiency, and performance in their community and also critical infrastructure connections. For example, in Connecticut

right now we have a statewide microgrid program that's supporting nine microgrid constructions in the state, and also DOE is supporting the New Jersey Transit System microgrid to test the microgrid to support a transportation network.

So that being said, it still should be emphasized that the marketing environment and regulatory settings have a significant impact over whether or not a commercial microgrid will be able to survive and thrive. Public policy support, therefore, will be one of the key enablers that help create local markets for ancillary services to recognize the local value of microgrids and to popularize the demand responses through microgrid and also encourage technological innovations to further reduce the costs for microgrid.

So last but not least I want to emphasize that it's very important to continue the research and development of technologies that unlock the potentials of microgrids as a building block of smart grid, because only through the R and D activities we're able to eliminate these major barriers for wide implementation of microgrid in the power system. For example, there are some barriers

such as high cost of the microgrid and lack of quantity control and long-term optimization in microgrid. And, also, we do need some policy and regulatory research to make the microgrid viable in terms of commercialization. So through the research we should be able to turn these barriers into enablers so that we make microgrid one of the powerful solutions for enhancing the system's resilience and efficiency.

That's my talk. I really appreciate you listening to this, and I'm waiting for your discussions and questions. Thank you.

MR. TERVEN: Thank you. Good afternoon. I am happy to be here on behalf of my boss, General President Bill Hite, who has been an outspoken leader on the need to repair and upgrade our nation's aging infrastructure, particularly our natural gas pipeline networks. I would like to thank the Obama Administration, the secretary, the governor, the representatives, and everyone involved for this invitation to speak on this very important topic.

Our organization represents 370,000 highly skilled members throughout the United States, Canada, and Australia, and much of the day-to-day work of our

membership is devoted to improving the sustainability and efficiency of our nation's energy systems.

We spend, with our government dollars, over $250 million annually to ensure we are properly trained for this type of work. Our pipeline infrastructure is one of our country's most important energy assets, and we must maintain it if we are to enjoy the benefits of clean, abundant natural gas as a share of the nation's electricity generation.

Upgrading the standards of our current natural gas pipelines will create thousands of jobs for American workers and help protect the environment with reduced energy cost, fewer emissions, and increased resilience during severe weather that has been spoken of so many, many times today.

For most of us, the more than 1.25 million miles of natural gas distribution pipeline across the United States are out of sight and out of mind until something goes wrong, and that's what happened when Harlem residents learned just two months ago when a cast iron gas main from 1887, over 127 years old, exploded. Nationally the Department of Transportation estimates that more than

30,000 miles of decades old cast iron pipes are still being used to deliver this gas.

There are currently reported numerous leaks also in the natural gas pipeline system, reported in various cities that service the public, in one city methane concentrations about ten times greater than the threshold at which explosions can occur exist. Methane, as you know, is the second largest greenhouse gas emitted into the atmosphere, contributing 18 percent of our emissions.

Gas companies, as you heard, throughout the country are recognizing the problem with the deteriorating network and are engaging in pipeline replacement programs. This could take up to 30 years or longer to upgrade our systems. We can't wait that long, and we can't afford to wait that long, either. Every day that we postpone this critical investment we are placing the health and even the lives of our citizens at risk. Adopting a more aggressive time frame for replacing leak-prone pipes would reduce the amount of gas leaking from the system. It would return value from our gas customers paying for lost gas. It would improve public safety and cut greenhouse gas emissions. The BlueGreen Alliance, of which the United Association is

a partner, estimates that accelerating the repair time line could create hundreds, I mean, hundreds of thousands of jobs that could save businesses and consumers almost $1.5 billion and keep 81 million tons' worth of global warming pollution out of the atmosphere.

Many states and local leaders are stepping up to fix this problem. In Massachusetts, for instance, Governor Deval Patrick has led the state's Department of Public Utilities to launch incentive programs to encourage gas companies to replace leak-prone pipelines and operate more efficiently. The City of Chicago in Illinois, where I'm from, is undertaking a similar program, launching a ten-year initiative to repair and replace 900 miles of water mains and 2,000 miles of gas pipelines. Families in the Chicago area have been working on this initiative from the beginning, but unfortunately this kind of commitment to infrastructure improvements is the exception, not the rule, and we must change that.

Efforts to expedite the build-out and repair of our natural gas pipeline network is by doing swifter permitting processes by the DOE and Federal Energy Regulatory Commission. Support for a program we call

Replacing Cities' Aging Pipelines -- ReCAP -- is a great example of using education and advocacy tools to promote and accelerate large-scale investments, innovative financing approaches, and supportive policies for improving our natural gas pipeline infrastructure. This initiative is supported by BGA's four national environmental partners and from BGA's ten major union partners as well as the national AFL-CIO. Collectively we represent more than 15 million Americans and recognize the importance of investing infrastructure to improve our environment and also to create good-paying jobs for our communities for the people who live there.

We are committed to actively working with policymakers, stakeholders, and the public to brainstorm innovative ways to finance infrastructure projects. This involves community education and awareness efforts, encouragement of public/private partnerships, and partnering with consumers' groups and state officials to develop mutually acceptable finance solutions. We have found that it is important to engage consumer groups in particular because ratepayers often bear the brunt of postponed improvements. There is a report out that said

consumers paid at least $20 billion for gas that was unaccounted for and never used between 2000 and 2011. That is totally unacceptable.

Our organization this year will be 125 years old. We have learned a lot about pipelines in the past several decades, and we know how to build them better and safer than ever before. New pipeline technology and safety advances that were not available when many of our current pipelines were originally installed can readily address environmental risk factors and dramatically improve efficiency, and it's time we make these investments to ensure our that pipelines are safe, reliable, and built to last, and we are hopeful that the QER process will help foster a commitment to this process. And so on behalf of my General President Bill Hite and the entire United Association, thank all of you for having us here today.

MR HANSEN: Thank you all very much. I've heard a lot of solutions and a lot of urgency. I guess my question is how do you balance the priorities. How do you decide where you start and what you commit to now? And how do you get together on all of that? So I'm going to ask you. What's your idea for how to figure out sort of some

priorities and an integrated plan? What do we need to do?

MR. POOLE: I think the priority right now is to get some more pipe installed into New England from the resources just next door. There is nothing else that will solve this kind of problem. You know, Gordon mentioned how few of the electricity generators that use gas are able to operate. No contracts are going to solve that. There just isn't enough pipe. So the solution is build more pipe as fast as you can.

MR. REILLY: You know, it's been clear from all the discussion this afternoon that this is a regional problem, the shortage of gas and the kind of the codependency of the heating load and the generation on the same resource. I think the actual critical step has happened earlier this year when the six New England governors got together and recognized this and the efforts that NESCOE, the regional regulation group, is doing to move that agenda forward, both from the electric -- bringing more renewable electricity into the region and also more gas is the way to go. I think what the governors have come up with, though, is just a vision, and I think there are countless details to be sorted out underneath

that process. But I think that's the way to go, move forward on that effort.

MR. BILDA: I think that the pipeline is really a short-term solution in terms of priorities. I think the focus needs to circle back to long-term thinking and what is going to happen. And you heard the governor talk about, you know, innovation. So as people come together to try to put together -- you know, get the industry experts out of the equation. Experts are like the enemy of innovation. You know, you need to get some folks that maybe are not outside the box but sit in a different box to come up with better solutions for the long term. Because I believe the lights will really still stay on. But it's how much you're going to cost to it. Everyone's going to figure out a way to make sure these lights to stay on, whether it's the ISO or the big utilities or the small ones, but it's going to cost us a lot -- a lot -- of money to do it, and as that cost continues to escalate, new technology is going to come in, whether you want it or not.

MR. ZHANG: Actually, I like the idea, John's idea, of looking into the long term. Actually, to me, you know, I'm from the research community. I wish there could

be more support in terms of R and D. That's, of course, my priority here.

But I talked about microgrid. Microgrid is only one of the potential solutions for the infrastructure issue if we just focus on microgrid. So right now the most important thing, I think, right now is to reduce the cost. Right? So to make it a viable solution for many different scenarios, not just for important critical infrastructures but also for community level application, commercial applications. So reducing cost, but that relies on the power industry, for example, to find out the better material, better system control and policies so that to lower down the cost on the technical aspect.

Also, we need to do -- actually, our recent research found out although the concept of the microgrid is clear, kind of clear, the other control methodologies are there. People proposed it in academia or in publications, but if you really implemented that in the real system, it's really hard to make it successful. It needs a lot of work, a lot a research to study the control and corners of the distribution controls and also to seek some very particular opposition message to make sure the microgrid can not only

be successful short-term against this extreme weather, for example, but also that it can run for the long term, to achieve long-term profits. And also, of course, there is something that's now out of my control. It's kind of, I think, policy-wise, the regulatory bodies. They need to think about something that can provide good incentives for the solutions and make it a viable solution. Thank you.

MR. TERVEN: You know, I have to agree with the speakers. I think that a long-term policy really is what we need to figure out and sit in a room with experts and nonexperts, as I was listening to. I think you have to get in a room. You have say there is an issue here and that you have to address it. I think the long, hard winter made us all address the all-of-the-above approach for energy efficiency.

You know, in construction buildings, like this building here alone, it takes 36 percent of our energy for this building alone, right here. And of that 36 percent, because a lot of our buildings are over 100 years old, we lose 65 percent of that energy right out the window. So I think we have to have long-term solutions, but we have to figure out how to maintain them so that we're not right

back here in a month, six months, or a year from now trying to figure out the same solution, because technologies will control a lot of the things we do in the future, and you can see a lot of the advancements in technology coming.

MR. HANSEN: So there's not agreement even on how to get to an agreement, in a way, on this. So let me ask you, does a federal role -- let me just close with, what would you give as advice or key messages for the QER to take away from this panel discussion?

MR. POOLE: I think it's the same thing you heard from the last panel. Keep the pressure on FERC. It's going to take FERC to solve this problem, to help solve it. You know, the ISO is going to be going to FERC for leadership and direction, and so the DOE can keep the pressure on FERC to help solve the problem.

MR. REILLY: I'd agree with that. I think there's a clear role for FERC in the cost-allocation process. I think when you take the vision down to the next level and start talking about the economics of new construction and the cost of new energy imports from other regions, you quickly are going to come to the question, "Well, who pays for that?" And we have in New England, I

think, a somewhat unique ISO tariff which has been incredibly effective of getting transmission infrastructure built here, and this is where the costs of the common grid are allocated proportionately around New England on the basis of load, and that has worked extremely well. We have built $5 billion worth of transmission in the last nine years. It's been very effective. You know, those cost-allocation questions are all handled through FERC, and I think these issues of pipeline capacity costs and allocations are going to be very contentious, I think, when we get down to the final strokes, and I think that's something that FERC is going to pay attention to. And I'd emphasize Glenn's point and also the prior panel about having the DOE keep the eye on the ball here.

MR. BILDA: And I would agree with what's already been said, other than, you know, make sure the consumer is part of the equation.

MR. ZHANG: So I just hoped this meeting could be initiative for communications between the people here and the government to UConn. Actually, I want to emphasize that at UConn we do actually have a lot of potentials. Everybody knows that UConn is a great university, but very

few people really know we do have a strong power system program here. So every year we publish in top journals. We're working with the federal agencies to provide a lot of good solutions for infrastructure, power systems. So we do want to be able to help, to contribute to the state. So we wish this is an opportunity for us to build connections and communications for future solutions. Thank you.

MR. TERVEN: I was a political director for an organization for six years before I became the utility man, as they call me now. You called me the executive vice president, but my boss calls me the utility man. And what I had learned in six years in D.C. was this: It takes federal, local, and state all working together to come up with solutions that work together. You can't do it alone, FERC can't do it alone, state can't do it alone, and local can't do it alone. And consumers need to be in the room, just like I was listening to a while ago. We all share in this because we all have a part of this. So I think collectively we have to stay together and stay in the room until we find a solution and make sure it's a solution that is reasonable and it's something that we can work with.

MR. HANSEN: Well, thank you very much, panel.

We really appreciate your contributions and your answers.

(Discussion off the record.)

PANEL 5: REGIONAL APPROACHES TO SOLUTIONS

MR. HANSEN: Our last panel is Regional Approaches to Solutions. We have on the panel Steven Clarke, assistant secretary, Executive Office of Energy and Environmental Affairs for the Commonwealth of Massachusetts; Nicholas Ucci, chief of staff, Office of Energy Resources for the State of Rhode Island; Asa Hopkins, deputy commissioner for energy, Department of Energy and Environmental Protection, State of Connecticut -- right? Oh, I'm sorry. Director of Energy and Policy Planning, Vermont Department of Public Service. I am sorry about that, Asa. -- Katie Dykes, deputy commissioner for energy for DEEP; and Patrick Woodcock, director of Maine Governor's Energy Office. I'd like to introduce Katie, have Katie come down and make some opening -- you can do if from there, I guess, yes.

MS. DYKES: Well, thank you so much. Can everyone hear me okay? There we go.

I first want to thank the secretary of the

Department of Energy for choosing Hartford for this portion of the QER process. I want to thank everyone who has been here all afternoon. And I know there was a really great, robust discussion in Rhode Island earlier today. So it's wonderful to see the turnout and the interest in helping to inform the DOE's Quadrennial Energy Review.

I also want to thank my colleagues from the other New England states who were able to travel here today to participate in this panel. All of us sitting here on the stage have been working very closely together over the last six months to carry forward on the governors' historic commitment to a regional energy initiative that will ensure a cleaner, cheaper, more reliable energy future for New England.

It's been great to hear, you know, the discussions in the previous panels, the secretary and the governor's remarks. I mean, it's clear, I think, without going over what's been said previously, that New England's economic future is really in the bounds, that we're facing a tremendous challenge from the region's lack of an energy infrastructure.

And so without retreading over what's been

discussed, I wanted to -- you know, we're hoping that this panel will be an opportunity for folks to hear more about the current status of this regional energy infrastructure initiative that everyone has been talking about today. As I said to some of my counterparts as we were listening to the previous panels, I think the theme here is "No pressure, guys."

But, you know, clearly the situation that we're in is not acceptable. You now, the rising prices that we've seen that already retail customers here in Connecticut have experienced, increases in the standard offer price as well as we're seeing a lot of volatility in the offers from competitive suppliers, that's produced a tremendous amount of consumer outcry. We have the retirement of a lot of the non-gas resources that are challenging the reliability of the grid, companies that are exposed to the spot market. Companies that don't have firm gas supply have faced curtailment this past winter.

And let's not forget the environmental consequences of our lack of gas capacity or additional imports or transmission for Class 1, or hydro, which we've seen just this past winter this inversion of the gas and

oil prices such that oil units were running in merit, which is certainly not something that we want to see happen from the standpoint of our air-quality goals.

So I can say that the situation is really unacceptable to us, and we believe that the market has not produced any solutions to this challenge. There's been a lot of discussion, a lot of productive discussion, I think, among stakeholders who are involved in this market about trying to find productive solutions to this gas/electric challenge. And, frankly, I think we would not be all here working on this if we felt that the market was going to deliver a solution.

And the other take-away is that, you know, it's impossible for one state to solve this problem alone. We saw -- I think you've heard discussion earlier about Connecticut's comprehensive energy strategy. Just to take an example, we embarked on an ambitious natural gas expansion plan to make the opportunity of fuel-switching available for more homes and businesses, and as an incidental benefit of that process our LDCs have made investments in new capacity that's going to come online in 2016, and as we over time see those new customers being

added to the system, there will be some excess capacity that will be available for generators. That's really not what we set out to do with our gas-expansion plan. We're excited to -- you know, it's helpful to see that there may be some relief provided in the interim step by that capacity addition. But, frankly, you know, it's not a proper solution to have gas ratepayers or a program designed to add customers to our gas distribution system being a solution for providing reliable access to gas for electric generators. That's just not a solution, and that's not a subset of ratepayers that should have to bear the costs and the risks associated with getting infrastructure built out.

So let me talk a little bit now about what we've been working on for these past several months. I think most of you are familiar. Last December the governors issued a statement in which they agreed to advance this regional energy initiative to diversify our energy supply portfolio while ensuring that the benefits and costs of transmission and pipeline investments are shared appropriately among the New England states. And then in January we sent a letter on behalf of the New England

governors to the ISO requesting assistance in clarifying the specific infrastructure needs that the governors are seeking to address, and those include incremental gas pipeline capacity on the order of about 600 MMcf above 2013 levels, in other words, in addition to the Spectra AIM Project that's been discussed, as well as transmission to deliver up to 1,200 megawatts and as much as 3,600 megawatts of low or no emission resources into the grid. So since January we have been meeting and talking nearly constantly to refine this proposal and move it forward.

So what I can tell you today as far as our progress with respect to the gas pipeline investment, I want to note that the states -- we are still in discussion about what the precise amount of gas capacity would be that we ultimately want to seek. We have received stakeholder comment about that 600 MMcf level was in our January letter indicating that that was not sufficient. Some would like to see us go up to as high as 2 Bcf. I think in our discussions we were talking about or revising that number upward. So that is something we look forward to clarifying very soon.

It's also important to clarify that the level of

the gas that the states are focused on is not only targeted to improving the reliability of the grid but also on achieving an economic goal in terms of securing the same access to low-cost domestic shale gas that other regions such as PJM enjoy. So reliability as well as that economic benefit are our key drivers here and important to clarify.

The other key questions are who would backstop the contracts for the gas pipeline capacity, who should manage the capacity on behalf of the electric ratepayers who would be funding the gas capacity investment, and how would that capacity be released. Should the capacity be released into the market for any taker? Is it legally defensible to give gas generators a right of first refusal for the gas capacity? At stake here is the state's interest in ensuring that the benefits of the gas pipeline investment flow back to the electric ratepayers who are paying for the costs of that investment.

With respect to the transmission, I know many of you are familiar that NESCOE has been working in this area for some time to develop a model for coordinated regional procurement to help facilitate the multiple states achieving their various public policy goals. And we expect

that we would build on the work that NESCOE has done to coordinate procurement for the transmission portion of this package deal. We expect that an RFP will be issued on behalf of six states for transmission and on behalf of a subset of states with that list, that subset, to be determined, who will be seeking to purchase generation or capacity or renewable energy credits. Connecticut, I can say, will be one of the states that will be seeking to purchase generation and will be using the authority that was vested in this department by Section 7 of Public Act 13-303 to seek proposals for long-term contracts for Class 1 or large-scale hydropower. Other states, including Massachusetts and Rhode Island, have bills under consideration by their legislature to authorize similar procurements, and they may speak to that today.

I think it's also important for us to distinguish this effort from FERC's Order 1000, a framework for supporting transmission for public policy needs. We are not anticipating using a FERC -- an Order 1000 default cost allocation or having that applied to this effort. So I want to be clear about that. The six states are not sharing the costs of transmission to achieve certain

states' public policy needs. While some states will be purchasing generation to meet public policy goals such as climate commitments or renewable portfolio standard requirements, to the extent that those project require transmission, the six states would share the transmission costs if the benefits of the project in terms of reducing wholesale electricity prices outweigh the costs of the transmission.

Just a few last points. The states have been working very, very hard to reach collective agreement about how to share the costs of this investment fairly across all six states. I think we've made great progress on what has been always a traditional, challenging issue for states to resolve, and I expect that we will have that issue resolved very shortly.

And then, lastly, I also wanted to note that the states have taken effort to ensure that we're getting stakeholder input on this process, particularly through NEPOOL. We announced or we kicked off our engagement with NEPOOL on March 7 at the participants' committee meeting, and we've had several day-long sessions where we've gotten input from various sectors. We're taking that input very,

very seriously, and we are looking forward to incorporating or addressing some of the comments and issues that have been raised by various participants in our next engagements with NEPOOL. And as well we have gotten comments through the NESCOE Website, and to the extent that we're here today, it's yet another opportunity which we embrace to talk about what we're doing and to hear from the public because we want to make sure that we're being as transparent and engaging folks as much as possible, given the broad impacts of what the states are trying to do to address the solution. So I'll stop there and look forward to the discussion.

MR. HANSEN: I'd like to give the other panelists a chance to just make an opening statement. I'd ask, if you want, I'd ask you to keep it brief. So, Mark -- Steven. I'm sorry.

MR. CLARKE: No problem. Thanks, Katie, for that great introduction.

And as Katie mentions, there are a variety of imperatives that have united our respective governors in this regional energy infrastructure initiative. She mentioned cleaner powers. I'll very quickly talk about how

important that particular imperative is to this process from a Massachusetts perspective.

Governor Patrick has made clean energy a top priority in Massachusetts since day one of his administration, and the results have been quite impressive. We've seen some of the fastest growth rates in our wind and solar markets in history. We're up at 600 megawatts of clean energy, and our sector is growing very robustly and quickly.

The governor also signed into law one of the most ambitious greenhouse gas emission-reduction laws in the entire country. So Massachusetts is on the hook to reduce our greenhouse gas emissions by 25 percent from 1990 levels by 2020, so in the next five and a half years, and at least 80 percent from 1990 levels by 2050. So in order to help us get there, we're joining this initiative which, as Katie mentioned, will help us untap some of the region's clean energy potential as well as unlock bottlenecks to other regions that could also supply New England with large amounts of clean energy, whether it's renewables, large hydro, you name it.

So, very quickly, we do have a bill in the

Massachusetts legislature that would mandate that our utilities go out for long-term contracts up to the amount of 18.9 tera hours or 2.4 gigawatts of clean energy. It's a large amount, but that amount of clean energy, that additional amount, will make sure that Massachusetts complies with our greenhouse gas, our Global Warming Solutions Act. It will also provide the region with all the benefits that you've heard from all the other panelists earlier today: increased fuel diversity, higher enhanced reliability for the grid, price suppression, so a variety of different benefits, in addition to reducing the greenhouse gas emissions portfolio for the region. So that bill is making its way through our legislature, and it's an important part of this regional mission that the six governors are united behind in terms of making our energy grid much more cleaner, diverse, and reliable. So with that, I'll pass it along to Rhode Island.

MR. UCCI: Thank you. I'm from the state of the Rhode Island, which is that little, tiny place you drive through on your way from here to Boston. It takes like 40 minutes to get through. We have great beaches. So please come see us in the summer.

So I want to give you my viewpoint from on the ground in Rhode Island and where we're at. In Rhode Island our employment figures right now are about 20,000 jobs below our December 2006 peak. That's pretty significant for a state our size. Our unemployment rate heading into this winter leads the nation. It was over 9 percent. We just hit 8.7 percent this past month. That was big news for us, positive news, I think, but in comparison to some of my colleagues up here, we're a little behind the times.

Residents in my state, the average residential consumer experienced a 12 percent increase in the total utility bill in January, and if you look at the power supply component of that bill, the increase was over 20 percent. The fact is because of our regulatory paradigm, residents in particular, but also many of our commercial small businesses, haven't really faced the true impact of the price volatility we've seen over the past couple years in particular. It's just now starting to work their way into rates. And so if we have a 12 percent rate increase in January, I sort of wonder what it will look like again when those rates are filed later this fall for next January.

So this is not a recipe for sustained, viable economic growth, and to different degrees all of our states face the same problem.

And we've made a calculated decision, thanks to the leadership of our respective governors, that we either fix this problem together or we don't fix it at all. What do we risk if we don't fix it? Well, you heard Gordon and the ISO earlier talk a little bit about the reliability concerns, and that's clearly pretty important. Right? I think the ISO had some analysis done a year or so ago that showed that a loss, interruption to load in New England for one hour, cost us nearly a billion dollars. That's not something we can accept.

I think also from a political, regulatory, and sort of public-interest perspective we jeopardize the buy-in we've received on very important long-term strategic investments and clean energy programs that we rely on and also help drive investment in our local economies. It's energy efficiency. It's distributed generation, renewable growth. These things are critical to our long-term ability to meet our energy goals and make us more secure as a region. But if we don't fix the problem that's in front of

us right now, the support for those programs will wither away as will the support we have for the existing market paradigm in this region.

And you've heard -- you may have seen public statements, and I know that I've heard personally -- folks all the way up to the highest levels, FERC commissioners, saying, "Well, you know, why continue with the markets? Why not just vertically introvert again?" And I'm not sure that's really, you know, a viable solution. So we've attempted to do our research. As the six states and through NESCOE we've done a substantial amount of study and analysis on this problem. Our governors have helped sort of create a pathway for us to pursue, and we look forward to continue to, you know, utilizing this forum, working with DOE, the FERC, ISO New England, and the viable stakeholder community in this region to see how we can implement the pathways that Katie laid out for you earlier. Thank you.

MR. HOPKINS: I, first, want to thank DOE for convening this and having us here. As one of the folks who staffed the trial run for this effort on the Quadrennial Technology Review a few years ago, it's nice to see

something like this actually come to bear and to look beyond DOE's silos and look out into the real world and, you know, the challenges that are being faced on the ground in New England and elsewhere.

I guess I could say all the same things that my colleagues have said. Vermont has a somewhat different structure than other states. We remained vertically integrated, and that has allowed us to maintain a long-term perspective to make long-term investments and to think about costs and benefits on a long-term basis, and we think that the stability that comes with that has been very beneficial for us. That said, one of the ways you do that is with diversity of supply and so that when one fuel becomes more expensive or constrained, you have options. And so these kinds of infrastructure investments that enable access to options, whether they are domestic or offshore wind or hydro or access to natural gas from elsewhere, really do play a role in making sure that we can get that kind of stability and have the resources we need for those long-term goals.

In Vermont we have aggressive goals. Our goals are to get 90 percent of our energy across all sectors, not

just electric, from renewable energy by 2050. Now, that's an aggressive goal. I couldn't tell you sitting here today exactly how it will be achieved. But thinking about laying the groundwork for that and what are the kinds of things you need in terms of infrastructure, is it long-lived infrastructure? What do you need to build? What do you need to have in the way of policy and market structures and tools in your toolbox in order to be able to access that is a continuing challenges and driver for us.

MR. WOODCOCK: I want to thank the Department of Energy for taking the QER initiative on. It is a complex and multifaceted initiative. But I have to say that, you know, looking at what the secretary has done to assemble a great team, see some familiar faces that I used to work with, that I think they have assembled the right team, and I think they're starting it off in the right way, because I think New England highlights what a changing dynamic in our energy situation in the United States -- it's revealing itself in New England right now.

I think we have -- I want to highlight a few things I think New England is well positioned for. I think we have made a huge amount of progress with moving forward

to a clean energy, especially in our electrical sector. We're well positioned for GHG regulations. We have the support for clean energy from offshore wind with our renewable portfolio standards. And what really is alarming about this last winter is that it highlighted how close we are to having an affordable and clean energy situation in New England and also having one where we have oil generation burning that is not meeting our environmental objectives and is costing our businesses.

You know, I've been in this job for about a year now, and there have been three moments that really are striking and highlight, you know, what is going on in North America. The first is getting a call about the oil train disaster in Lac-Megantic, right across the Maine border. We've had about a 700 percent increase in shipments of oil across the state of Maine on very old oil tracks, going to access the refinery in New Brunswick. We have to move forward with a sensible policy of managing oil shipments across our country.

The second was getting a call on Christmas Eve where somebody could not access propane. They had a cold home, and they were looking to the energy office for

support. There's been a lot of progress moving to propane in New England. Our infrastructure has not kept up with it. People should not have to be calling their energy director and asking for propane supplies at Christmas Eve.

The third element is really at, I think, the governors' conference where looking across -- and we would be remiss if we didn't outline that our partnership is across the Canadian border where the resources that we have. We have actually become a potential powerhouse when it comes to energy production between our neighbors to the southwest in Pennsylvania and north with hydroelectric generation. It's trying to take advantage with the basic infrastructure to take advantage of those resources. That's the simple fact of what this initiative is it all about.

We're at the point -- and I'll just finish here. Glenn Poole from Verso was here. I remember at a meeting he was watching electrical prices and trying to figure out if he was going to stay open or shut down that day. We have had companies come to the state of Maine who haven't done their homework and say that this is a great place to invest in, geographically well positioned, great access to

a wood basket, and they haven't done their homework, and they say that you have, of course, access to natural gas pricing that puts you at a competitive advantage. Those companies are not investing in New England right now, and we have companies that are deciding whether to keep the lights on. It's an economic imperative. I don't think we're all happy that we're here, but we've got to move forward with taking advantage of the changing energy dynamics in the Northeast.

MR. HANSEN: Thank you. Okay. I have some questions that I want to ask you. I want to -- sort of a disclaimer here. These are not sort of DOE questions that reflect DOE's opinion or anything. They're more, like, to stimulate the discussion here.

So the regional governor initiative focuses a lot on infrastructure projects like pipeline natural gas transmission, large-scale transmission for large-scale hydropower, and some Class 1 renewables. What would you say to people who would question you and say, "But why aren't you focusing on other solutions such as LNG, demand response, distributed generation, or energy efficiency?" So what would your response be?

MR. CLARKE: It's a great question. We get it as a group frequently. I think the short answer would be most -- all six states are actually pursuing a lot of those solution unilaterally now. You know, in Massachusetts in particular, we've constantly been highlighted as a leader when it comes to energy efficiency for the past three to four years or since Governor Patrick took office. We spend upwards -- we've committed upwards of $2 billion specifically in energy efficiency to help reduce demand in Massachusetts as well as the same with demand response. So we've taken sort of a very flexible and diverse perspective when it comes to addressing some of these challenges with these alternative resources that you mentioned.

But collectively, some of these infrastructure projects, it's very difficult for any single state to develop a solution unilaterally, as Katie had mentioned earlier, so hence the focus amongst the six governors on large-scale infrastructure, which no single state could tackle on its own. So I think that's sort of the short answer to the question. Hopefully -- you know, we're also interested in nontransmission alternatives of addressing some of these critical issues aside from the large-scale

infrastructure investments. But, you know, we're very focused on reducing the prices and enhancing the diversity that these infrastructure projects would usher into the region.

MR. HANSEN: Anybody else?

MR. UCCI: Yes. That's a great question, and I've heard it several times. And I don't mean for this to sound flip, but I would say, "What else does New England need to do to prove our commitment to some of these long-term clean energy investments?" So again I'll just use Rhode Island as an example. So we have energy efficiency targets in place for 2017 to reduce the load by 2.6 percent. That's about 200 megawatts, give or take, for Rhode Island. Substantial, nation-leading. For a tiny, little state like ours to be making these sorts of investments, I'm biased, but I think it's pretty phenomenal.

Distributed generation. We have a bill in our legislature pending right now to basically quadruple the size of our local renewable distributed generation program from 40 megawatts, add another 160, for a total of 200 over the next five years. Substantial.

Renewable energy portfolio standards that all of us have and one instance, volunteer goals, I think, but along the same lines. You know, our state has a long-term contracting statute for utilities to get renewables. Our state has had a contract for Deepwater Wind, which may or may not be, Steven, whoever finishes the race first may be the first offshore wind project in the country. So, you know, I understand the concern. In Rhode Island we're taking sort of an "all of the above" clean energy approach here that must include this sort of regional engagement and activity if we're to survive and, frankly, continue making those other very important investments today and into the future.

MR. HOPKINS: I think some of it is a question of time scales. You could imagine, for example, you could do the back-of-the-envelope, nontraditional alternative transmission analysis for the gas pipeline. How much would you have to reduce heating demand on peak days in southern New England in order to relieve the pipeline constraint and get the prices down? Well, you'd have to be on a sort of a one-quarter-ish reduction, but you can't implement efficiency programs that fast to get a one-quarter

reduction on the time scale that we need in order to unlock that potential and get -- you know, on the time of scale that you can imagine building a pipeline. A pipeline is not built overnight, but it's faster than weatherizing every home in southern New England by 25 percent.

So thinking through those kinds of analyses, some things you really do need to build in order to get the benefits from them. Other things you don't. You know, as Larry mentioned in the previous panel, we have a transmission upgrade in Vermont that we didn't have to build because of investments in efficiency investments and solar and those other pieces so that we can actually put those together, build the infrastructure we need, and not build the infrastructure we don't need.

MS. DYKES: I might just add that this is an area that, you know, we've looked at through NESCOE last year. The states commissioned a study done by Black & Veatch which evaluated some of the costs and benefits of various different resource investments to address this issue. And I think -- you know, you raised LNG as well as demand response and these others, and we did look at that. This study, as with many studies, due to the constantly changing

retirements picture and so on in the region, became outdated almost as soon as we put it out in terms of its actual numbers, but I think directionally we still find it to be very useful in outlining, you know, that there are benefits, particularly from LNG, for example, as a short-term solution. But the gas pipeline and the transmission far and way as long-term solution are the most cost-effective approaches, particularly where you have firm contracts backing up or ensuring that the power is delivered over the transmission.

And I think that -- you know, your asking that question also gives an opportunity to say just another sort of design criterion on what the states are doing here. We've gotten a lot of questions about, you know, the states are intervening into this market. You deregulated, and now that you step into this area you're affecting that market. How do we ensure that we still have a functioning market? And I think that we certainly don't want to be doing this. As I said, we feel confident that the market isn't delivering the solutions. In the time horizon it will still continue to support industry in the region.

But with that said, we're looking at how we

ensure that this activity, this initiative, is really limited, at least as a one-time thing. While we're investing, we're looking at the longer term solutions because they're the most cost-effective. It's also in part that we don't want to be coming back and doing this every year, that we want to be clear about what we're doing, send that signal to the market, get this additional infrastructure built, and then be done. I think there's many that would be glad to see that as well.

MR. WOODCOCK: I would just add that the decision of New England being heavily reliant on gas has been made, and it is something that we are going to have to manage for the foreseeable future. In that context, trying to manage the situation or trying to solve it? And I think we've seen that we've tried to manage it over this last winter. It was costly. It did keep the lights on, but it cost us a whole lot of money. Looking long term, we've had retirement since this initiative was initially thought about back in the summer. We clearly need to manage our natural gas load when we've highlighted this year where we're not using the natural gas that is just adjacent to us.

MR. HANSEN: From a similar point, I can imagine someone saying, you know, "Why are the states seeking to support infrastructure investments through FERC-approved tariffs? Couldn't you do the same thing through state legislation? And, if so, why are the states not pursuing that path?" So, Patrick, I'll start with you.

MR. WOODCOCK: Well, interesting enough, the State of Maine has passed authorizing language for our Public Utilities Commission to purchase pipeline capacity, and currently the commission, under the Maine Energy Cost Reduction Act, has the authority to buy 75 million cubic feet per day. We're doing the analysis. If any situation could arise where it would make it cost effective -- where it could be cost effective to utilize that authority. We've passed that with our hope that New England collectively would move forward. But, frankly, the costs to the Maine economy are so severe. We are looking to partner with anyone. We've had conversations with Nova Scotia. We've had conversations with New Brunswick. We've had productive conversations across New England. The real bottom line is results. You know, we heard that. Everybody up here today has said we need results. We don't

care how we get there, but it needs to move forward, and it needs to move quickly.

MS. DYKES: I would add, similarly, we've been looking at -- we need to ensure that we have -- because the benefits of this investment will flow to all six states, to electric ratepayers across all six states, we're really looking for solutions that would ensure that those costs are fairly recovered from that same set of six states and those ratepayers are going to benefit. And I gave that earlier example about Connecticut's gas expansion plan which we've had legislation and a comprehensive energy strategy that drove that forward, and that is providing benefits when those pipeline additions come online in 2016 to electric ratepayers across the region, you know, for that temporary time until those new customers take up that additional capacity. But all of those costs and risks are being borne by gas ratepayers in Connecticut.

And so I think that as we considered whether to go down a legislative path -- I mean, there are many attractions to that. We don't want to discount the challenge of getting FERC approval, but at the same time there's also challenges in terms of getting, with no

disrespect to any of my esteemed legislators who may be in the room, particularly from committees of relevant jurisdiction, but trying to get that legislative action done uniformly in six different states on the time horizon that we would need in order to provide solutions to this pressing problem before we have to go through too many additional winters like the one we've just had drove us to trying to pursue a FERC tariff instead.

MR. HOPKINS: The answer is we share a common regional grid with all sorts of tariffs and costs that are allocated across the region, and the costs and benefits of any one thing are going to flow around. This kind of an issue wouldn't work with only southern New England as its driver because the northern New England states are also part of the same grid, and we happen to be between the southern states and Canada. And so those issues matter, and we need to be all six together and sharing that grid, sharing the process, sharing the cost allocation. So it makes sense to try to do that in a unified fashion.

MR. UCCI: Let me just add to that. Frankly, as you can see from the participation up here today, this is an interstate problem that deserves an interstate solution.

You know, these projects are going to cross political borders. And in a way I think that we're also taking our cue a little bit from FERC. I mean, they implemented this Order 1000 framework where they're looking at tariff mechanisms for projects driven by public policy.

Moreover, we build transmission today, interstate transmission, for reliability under federal tariff. And, boy, there is no bigger, greater reliability problem facing us today than what we're talking about now. So I think there is a timing constraint here. We don't want to go through any more winters than we need to without a longer term solution. But, you know, I think we see precedent for this sort of activity, and I think you heard some of the utility executives earlier echo this same sentiment. So we'll see where it takes us.

MR. CLARKE: Just very quickly, two things: One, I think it will be a combination of some state-level action, as everyone up here mentioned, whether it's the enabling statutes in Maine or Connecticut or our bill in Massachusetts. We will need that combination between the state-level action as well as this regional action around the tariffs.

Secondly, I think it's a matter of scale. So, for example, ISO New England released a report about four years ago that looked at the resource potential for wind in New England, huge resource potential, upwards of 10 to 12 gigawatts. We could power 24 percent of our electricity needs just from either onshore wind or offshore wind. But most of that resource is transmission constraint. No single state can make or afford the investments to unlock that potential and supply the region with all of the benefits that would come along with 10 to 12 gigawatts of wind, but working collectively we do think we can untap that resource potential as well as allocate those benefits regionally without it being an undue burden on any single state. So I think scale plays a critical role in the regional perspective.

MR. HANSEN: Unfortunately, we only have a few minutes left so I'm just going to ask. Any final words to the QER? Comments? Suggestions? We'll start with you.

MR. CLARKE: Very briefly, I think we are at an historic juncture here in New England in terms of the future of our energy system. All six governors have really united and shown really historic leadership -- I don't

think this has ever been done before -- in an attempt to really position New England to be a leader, not just sort of in terms of, you know, your traditional criteria for a reliable and robust electricity system that's diverse and reliable and the like, but I think the future of our regional economy is at play here.

I think looking at Massachusetts is a great example of how the clean energy component of this could lead to significant job growth, economic competitiveness, and the like. So we're really excited to be a part of this. The collaboration has been fantastic. I mean, if we can get this right in a very short time frame -- we're literally talking a matter of months to get these tariffs going and the state-level bills passed -- we can really put the region in a place to assume a leadership role nationally.

MR. UCCI: You know, the mere fact that you're having this forum here in New England, just to start it all off, I think is testimony to the importance of this issue, and I don't think a weak New England will be good for the rest of the country, either. I think that we're certainly biased up here in our little area. But, you know, this is

an issue that other regions in the nation are facing as well. And so, you know, I was there this morning in Providence with my governor and Secretary Moniz, and I know that we're very appreciative in Rhode Island of you guys hosting that, having that event there, and I look forward to continued dialogue as we move forward.

MR. HOPKINS: So I'll just take this one last moment to plug and to plug DOE to continue to look and to feature in the QER nontransmission alternatives and only building the infrastructure that we actually really need to build, and that includes DOE's investment in R and D and financing and planning tools for renewables and for energy efficiency so that those tools are in our toolbox. We know how to integrate those resources in. We know how to account for them in planning. We know if a thousand customers in this area each put 5 kW of solar on their roof, what does that mean in terms of what infrastructure do I actually need to build? Is there a turning point where there's too much solar and when is that and how do we plan for that?

And another key component of that is energy storage technologies and figuring out whether it's in the

microgrid context or in the NTA context or other ways of taking these intermittent renewables, firming them up in that respect, providing regulation service, all these other kinds of ancillary services, and figuring out where the value propositions are and building what we need to build and not building what we don't need to build.

MS. DYKES: I would just add, you know, I think that what we've been engaged in, I think when the dust settles and when we're done, you know, it will be interesting to look at whether or not this is actually a good model for regional cooperation. I think we heard the secretary say several times about, you know, whether it's actually a desirable goal to pursue a national energy policy or whether our national energy policy is actually a collection of salient regional energy policies. And I think that it's been a privilege to get to work with this, with my counterparts in these other states on these issues. I think that it raises, you know, a question about if we're successful on this effort whether we can apply a similar collaboration on further efforts.

There is a real challenge, you know, though, when you're working as a state regulator and trying to achieve a

common goal among multiple states in how you take recognition of the public policy objectives and goals of states other than your own and how you factor that in when you're evaluating the cost-effectiveness and sharing the costs of particular projects that you would not necessarily be pursuing if not for something else that you want the other states to help you achieve. I think the fact that we've been able to work so productively together so far really speaks to the gravity of the problem that we're facing, that I think the fundamentals of this problem are very transparent across political boundaries, across our state boundaries, and that's why we're here and working together.

But, you know, on the dark days I see it as this is why the Articles of Confederation didn't work. But I think that on the bright side, though, I think that there may be some lessons for us to take away here about how we can search for those more issues like the ones that we're trying to address here where we can identify common and compatible public policy objectives that we can try to achieve together, even if each one individually may not be one that the states can support. And that may be something

for DOE to think about is, you know, we happened upon something where we all needed something and to collectively -- you know, it comes together, and we can make it work. And trying to find those other types of collections of goals that make sense across a region I think are the key to seeing if this model can be effective.

MR. WOODCOCK: I'd just echo that, that I thought the secretary's comments that really we do have very diverse regions throughout our country, each challenge -- each region facing its unique challenges. I think really what I've been struck with is just aligning policies that integrate our electric and natural gas markets. They are not working together. We do need market solutions ultimately, but at this time it is an economic imperative to move forward with this basic infrastructure.

MR. HANSEN: Well, thank you very much, all of you, for very thoughtful discussion. I appreciate it very much. The next section will be the public comments, and if you give us a minute for our transition here.

(Discussion off the record.)

OPEN MICROPHONE FOR PUBLIC COMMENTS

MR. HANSEN: Okay. We're just about to start the public comment section. Just a few comments ahead of time. I'm going to read the name of each speaker. You'll be coming up in pretty much the order in which you signed in. You will have three minutes to talk, and that is a hard stop, unfortunately. So if the three-minute time comes and passes, with all due respect, I'm just going to thank you and move on to the next one. Someone will be sitting here doing these cards so that you can see how your time is coming. Okay.

And so we have on stage Karen Wayland. She is pretty much the head of all this. She's the director for the state, local, tribal, cooperation, Energy Policy and Systems Analysis. Did I get that right, Karen? Good. And next to her is Larry Mansueti. He's the director for state and regional assistance, Office of Electricity Delivery and Energy Reliability, and sort of on loan to help Karen. And then Matt McGovern is senior advisor, office of the deputy director for state, local, tribal cooperation, Energy Policy and Systems Analysis. So they're the EPSA representatives who essentially you will be giving your comments to.

Leigh Youngblood.

MS. YOUNGBLOOD: Hello. Thank you for the opportunity to speak. So my name is Leigh Youngblood. I'm the executive director of Mount Grace Land Conservation Trust, the North Quabbin Regional Landscape Partnership, and the Massachusetts Land Initiative for Tomorrow. My comments address the Tennessee Pipeline Proposal.

Since 1986 Mount Grace Land Conservation Trust has conserved 27,000 acres of land in two dozen north-central Massachusetts cities and towns, partnering with hundreds of private landowners and state, local, and federal agencies for the benefit of the environment, the economy, and future generations. Mount Grace is keenly aware that no public convenience will be achieved by construction of a new shale gas pipeline across the northern tier of the commonwealth of Massachusetts. Kinder Morgan's Tennessee Gas Pipeline Proposal to have local ratepayers finance the destruction of conserved and/or intact natural resources that are relied upon for good health for the purpose of transferring outdated fossil fuels which are unnecessary for meeting an already shrinking regional energy demand and detrimental to a

global atmosphere increasingly reactive to greenhouse gases, this taxes the public in multiple ways only to funnel the resulting immense private profits to relatively few.

The New England states are increasingly achieving record energy efficiencies and readily embrace community scale renewable energy infrastructure in lieu of a new pipeline. For example, the $2 billion price tag of the Mass section of the Tennessee Gas Pipeline could be more prudently spent installing 4 kW rooftop solar systems on 100,000 homes, which would collectively generate $80 million worth of electricity annually, this without destroying the land or atmosphere.

An alternative infrastructure investment such as this at this scale, 400 megawatts, would provide numerous benefits to the public interest while avoiding critical losses to 100 years of prior investments in land conservation and by avoiding time-sensitive exacerbations of climate volatility extremes that we are experiencing today, and they are projected to worsen. Thank you for your time.

MR. HANSEN: Okay. Stephan Kurasaki.

MR. KURASAKI: Thank you. I would first like to say that the Northeast doesn't have a supply-side problem. The problem that we have is a demand and supply-side problem. If the problem is only referred to as a supply problem, then only a supply solution will be looked at. If we talk about meeting our needs, the conversation should start with conservation, energy efficiency. And if we have a concern about the climate change, fairly would be renewables, and lastly would be the polluting technologies such as fossil fuels and nuclear. If we do not implement this list in this order, we will leave a very different climate and a planet that is difficult to live on for our grandchildren.

I would like to illustrate the power of conservation, energy efficiency, and renewables. Two years ago my wife and I had the good fortune to participate in the National Grid Deep Energy Retrofit Program. Thank you, National Grid and Massachusetts. By superinsulating and air-sealing our house -- we installed a heat pump, a 2-kilowatt solar system -- and practicing conservation we were able to bring our total cost for electricity, heat, and the entire energy use down to $60 a year. This is

equivalent of 60 pounds of CO2. Conservation efficiency renewables have been mentioned by a few different presenters today. We need to bring conservation, energy efficient, and renewables to the center stage to solve our energy needs. So I have six recommendations.

Number one, incentivize to a greater extent peak load shaving. Number two, make it mandatory that any building that is built be built to zero net energy or zero plus energy perimeters. Number three, institute a more aggressive time-of-use electric metering system that Mr. Reilly of the Vermont Electric Power Company mentioned earlier. Number four, put a severe carbon tax on all polluting energy producers. Number five, measure CO2 equivalent emissions for the complete cycle of extraction, manufacturing, production, and burning of all fossil fuels. Number six, remove all incentives for energy produced from fossil fuels and nuclear. Thank you for your time.

MR. HANSEN: Thank you. Could I encourage you both to submit your comments in writing? And you can do that at QERcomments@HQ.DOE.gov. And I'd like all of the people who comment to also submit their comments in writing as well. Thank you. Next up is Janice Kurkoski.

MS. KURKOSKI: Hello. Thanks for hearing us. My name is Janice Kurkoski.

MR. HANSEN: Oh, I'm sorry.

MS. KURKOSKI: That's okay. I am the chair of the Warwick Buildings and Energy Committee. That's Warwick, Massachusetts, population 750. I'm also a member of the North Quabbin Energy Group. Our members in North Quabbin Energy represent the nine towns of the North Quabbin energy committees appointed by the town-select boards. We are grappling with how to reduce our energy consumption and save money in our small towns.

For the past six years we've participated in many different types of events and activities, always with an emphasis on the idea that the single best way to address the high financial, social, and environmental costs of our current energy use patterns is to consume less energy in the first place. We discovered in our community work that most people seem aware of the reasons for conserving energy and they're also knowledgeable about the basic weatherization and conservation strategies that utilities, municipalities, and community groups like ours try to promote. But except when energy prices are extraordinarily

high, it appears that there is a great deal of inertia among the general public about actually making changes in their energy consumption patterns.

So I want to bring to your attention a legislation that we would like the states and also working with the Department of Public Utilities to implement, a rate-structuring program or stepped utility or a tiered rate as has been done successfully for many years in the state of Vermont by a small utility called the Washington State Cooperative. They have a tiered rate. National Grid does that in our area but in a very minuscule way. So if you use over the average amount of electricity, you get to pay a little bit more for that. In the Washington State Cooperative they made that even more pronounced, and as a result their customers use on average about 17 percent less than households in our area.

So I'm asking for how could these -- well, one, how could the concerns of low-income customers or those with large families, how could their concerns be addressed? And I can say that the programs that are already in place have answers to those questions. I also want to know what could the revenue do from these increased revenues from

people who overconsume, and I would suggest that public outrage would be justified if the money went into the general coffers of the utility companies. Enhanced conservation programs should be the target of these revenues. Thank you.

MR. HANSEN: Next up is Joe Dolten. Okay. I will go on. William E. Dornbos. Did I get it right?

MR. DORNBOS: Dornbos. Yes. Thank you. Thank you for the opportunity to comment. I'm an attorney and the ENE Connecticut director for Environment Northeast. I just want to make three high-level points because in three minutes it's not very possible to talk about detailed energy policy.

The first would be that it's very important and we would encourage DOE to think about the top-order question that it's going to ask itself as it analyzes these energy issues, and we would propose that that question should be formulated somewhere along the lines of how do we address New England's future energy needs at the lowest cost consistent with our environmental goals, and we think that this question then, if you approach it in that manner, then the resource analysis falls out in a way that

highlights the advantages of demand-side resources, which we would politely disagree with. Some of the speakers earlier today have not actually been studied and given equal weight, at least according to the studies we've looked at. In particular, distributed generation, combined heat and power, and energy efficiency have all been essentially left out of most of the major studies. These are huge resources that can be deployed at low cost and at lower risk than a pipeline and actually faster. And we disagree with Vermont on that too.

The second point I want to highlight is that there are technology changes that are happening right now, and they're pointing to an energy future that depends more heavily on distributed energy and renewable supply. Long-lived infrastructure investments that do not recognize this future energy world could very well prove economic, potentially saddling ratepayers with stranded costs, and this is the major risk of a new natural gas pipeline.

An example of a very promising technology that we've spotlighted in our energy vision report that has the potential to transform the thermal sector are cold-climate ductless heat pumps. They're actually viable now in New

England and commercialized. They have a coefficient performance of about 2.4, which makes them much more efficient than thermal technologies for heating your home, and they also have the advantage of both heating and cooling your home. We think that technologies like these should be studied and incorporated into any regional analysis of New England's energy future.

Finally, I think we have an historic opportunity to get this right, and we just encourage DOE to not rush to judgment on this. There are a few principles we'd like to humbly suggest. First, please keep consumers first in mind when we're thinking about making these investment choices. Also please think about aligning infrastructure expenditures with state public policy priorities, including long-term energy and climate goals. And then please also be sure to think about viable advanced technologies that are now entering the marketplace that could have the potential to disrupt long-term investments in traditional infrastructure. Thank you.

MR. HANSEN: Thank you. Next is Doug Pfieister. Okay. Rich Cowan.

MR. COWAN: Hi. My name is Rich Cowan. I have a

master's in electrical engineering at MIT. I want to just react to some of the things that were said on the panel. And I'm not speaking as an energy expert. I do not work in the energy field currently. I speak as a consumer and a parent, and I also work with the Mass Pipeline Awareness Network.

We heard a lot on the panel today about pipeline constraints, about how we urgently need to add, I think it was, 2 billion cubic feet of capacity in order to serve our needs. As you all know, people who are in the energy industry, there already is a project that will add about one-half billion cubic feet of new natural gas supply slated to go into service in 2016.

Also, as somebody who grew up in the South Shore near Boston, I remember driving by the Dorchester gas tanks. I remember when I was little there were two of them. There were two gas tanks there that I assumed supplied LNG during the winter so that during peak months the Boston area had an adequate natural gas supply. Currently there's only one natural gas tank in Dorchester, and I'm wondering, if the situation is that urgent, would it make more sense as a short-term solution to add

additional peak shaving tanks to these facilities in Boston and other power plants around the region as opposed to going into an area that currently has no gas infrastructure at all.

The third point I wanted to make is that we heard today that natural gas has about 50 percent of the global warming potential as oil. As many of you may be aware, Professor Moniz was the director of the MIT Energy Institute and was involved in an academic dispute with other academics at Cornell University who claim that natural gas when produced by fracking has almost the same global warming potential as oil. So I would just ask you all to try to analyze what the actual effect of these energy conservation and initiatives are. We don't want a situation where our consumers are paying tariffs to support new infrastructure that actually does not make any meaningful contribution to reducing global warming.

The fourth point is that there is no reason why programs that help people insulate their attics, air-seal their basements, replace 40-year-old heating equipment should only kick in if you convert your heating system to gas. Clearly that's increasing the gas-shortage problem,

and maybe what we need to do where there is an emergency situation is to cut these programs off temporarily, have a moratorium, and allow people with oil heating to get their homes done.

The final point is that this was a very cold year. I know that in the future we will probably also have cold years, but it's possible we'll never have a year as cold as the one we just had because the planet is warming. Consider that also before we decide to invest in new pipelines. Thank you.

MR. HANSEN: Thank you. Next is Jeffrey Leitz. Francis Pullaro. Did I get it right?

MR. PULLARO: Pullaro, two Ls.

MR. HANSEN: Okay. Sorry.

MR. PULLARO: Good afternoon. My name is Francis Pullaro. I'm the executive director of Renewable Energy New England, or RENEW. RENEW is an alliance of environmental advocates and renewable energy developers here in New England. Our mission is to ensure that New England's own renewable energy resources are able to be developed.

The only point I would like to make today picks

up on some of the comments you heard on the energy secretary's panel. I think Congressman Larson pointed out that he sees natural gas as a bridge to the future, the renewable energy future. And I would just ask that as the federal government considers policies that it continue to keep in mind that here in New England, even if you see natural gas as a bridge to the future, we're still at the end of the pipeline, and if it's made too big you might thwart state policies that have been in the works for the last decade or so to help develop the region's own renewable resources, so that any policy that is developed, pipelines that are built are not overbuilt.

I think you heard from Bill Dornbos talking about the dangers of stranded costs. You heard from the last panel about a lot of the economic development benefits, reliability benefits, clean energy benefits that come from having renewables built and sited here in New England. So I urge that federal policies help the states achieve their goals that they've been so successful at achieving in the past and that from what you heard on the last panel they're looking to do over the next number of years. Thank you.

MR. HANSEN: Thank you. Okay. Next up is Tim

Costellot. Chris Recchia. No? Steve Kaminski.

MR. KAMINSKI: Actually, I'm going to pass on any substantive comments but just to say I'm with New Hampshire Electric Co-op. It's a consumer-owned utility in New Hampshire. And I really support the work that DOE is doing here. I just want to say somebody was here from New Hampshire, and I noticed there wasn't a single person on any of the panels. But we're interested in this, and it's a very big concern. All of these concerns are big for us consumers in New Hampshire as well. Thank you.

MR. HANSEN: Thank you. Taofeer Orekan. Erin O'Sullivan. Lannu Reed. Chris Herb.

MR. HERB: Good afternoon. My name is Chris Herb. I'm the president of the Connecticut Energy Marketers Association. We're a trade association that represents 600 petroleum marketers and their associated businesses in Connecticut. Our members employ about 13,000 people in Connecticut.

We're here today in support of the New England Fuel Institute's recommendations that were submitted to you this morning in Providence. CEMA would like to emphasize that the petroleum industry is a big part of the solution

to the region's natural gas issue. Bioheat fuel provides a cleaner and more reliable alternative to natural gas. The liquid petroleum distribution chain is strong and has evolved without government policies promoting it or public subsidies paying for it.

The most commonsense approach to ensuring that energy resources are available in New England to meet power generation demand, home heating, and the needs of businesses is to have a diverse mix of fuels to rely upon. If reliability is a top concern of the federal government, then the answer is simple: Continued and greater use of bioheat fuels is the solution. History proves that when the natural gas industry fails to meet demand, the liquid petroleum industry steps up to bail them out. You cannot find a more reliable fuel source than heating oil or diesel fuel in this region. The only way that the petroleum distribution system can be compromised is by misguided state energy policies that promote one fuel over another and send market signals that discourages future investment in pipeline, terminals, or other storage and transportation infrastructure.

CEMA agrees with the following NEFI

recommendations: Number one, the administration should be active and vocal in support of the industry-wide transition to an ultra-low sulfur heating oil product throughout the entire Northeast that is in keeping with the President's environmental goals and is in the interest of the region's businesses and consumers. Our industry stands ready to work closely with USDOE on this issue.

Second, the administration should be active and vocal in its support of the transition to heating oil to a more affordable, efficient, environmentally secure renewable fuel. NEFI and CEMA encourages the task force to explore ways to increase the production of biofuels that are ready for introduction to the region's heating oil supply and encourage their use. The administration should support the industry's application to amend the ASTMD 6751 specification of bioheat fuel to a 20 percent biodiesel blend or higher.

Third, before investing in new natural gas infrastructure or expanded pipeline capacity, state and federal government should require that existing lines are repaired or replaced at the expense of for-profit utilities themselves, not taxpayers or ratepayers. Power generation,

large-scale consumers, heating oil dealers, and suppliers should coordinate to plan properly and head for supply situations prior to each heating season to ensure adequate access to all heating sources. While liquid fuels continue to be the backstop for energy consumption, its suppliers must be an integral part of public policy planning.

Number four, as the regions transition to an ultra-low sulfur heating oil, supplies of all distillate will become more dependent on supplies from refiners in the Gulf Coast, Pennsylvania, New Jersey, the Virgin Islands, and Canada as opposed to higher sulfur fuel imports delivered by non-Jones Act ships from Russia and elsewhere. Therefore, the QER task force should support investment in upstream transportation in New England and the border Northeast region states to ensure adequate supply. Thank you.

MR. HANSEN: Thank you. Again, I'd encourage all of you to submit your comments in writing, QERcomments@HQ.DOE.gov.

Next up, Eric Brown.

MR. BROWN: Good afternoon. Eric Brown with the Connecticut Business & Industry Association. Thank you all

for being here today. With no offense to the headliners on the first panel, my sense was that the last panel with the state representatives -- I was very, very encouraged by that. That is an incredible display of different states run by governors of different parties with different agendas coming together and really solidifying around a couple of core messages for all you to take back to Washington. They all want to promote renewable power. They all have aggressive renewable portfolio standards. They all want to encourage local distributed generation, but I think they made a resounding message for you guys to take back to Washington is that right now the priority, the urgent priority -- many of them used that word -- is to get this transmission put in place so we can access energy that ten years ago or five years ago, if we had said we've got the possibility of being energy independent with cleaner natural gas and emission-free hydro -- you want to talk about out-of-the-box thinking -- there would have been rejoicing in the streets, not to mention the impact on our national security situation.

So please heed their message, which I thought was clear. There are a lot of components to this, and there's

a lot of things we want to promote over a long period of time. But the urgency, I thought, that they gave was very, very clear. And I hope that you'll bring that back with you. Thank you very much.

MR. HANSEN: Okay. And then, lastly, Peter Aziz

MR. AZIZ: Thank you. My name is Peter Aziz Along with my family, I own and operate Bantam Home & Energy, located in Litchfield County. We provide our customers with bioheat home heating oil, propane, HVAC services, and energy audits. I currently serve as the chairman of the board of directors of the Connecticut Energy Marketers Association, and we represent 600 family-owned home heating oil dealers in the state. We're proud that we can now make claim to a radically cleaner renewable fuel. Bioheat, the combination of ultra-low sulfur fuel with biodiesel, is cleaner than natural gas in its emission standard and should be encouraged.

In view of the rampant methane leakage from natural gas lines and its impact on climate change, the government should encourage domestic production of bioheat by renewing the biodiesel tax credit. The home heating oil industry has delivered remarkable efficiency savings to

millions of customers, reducing consumption for a typical home from 1,200 gallons per year in 1989 to 700 gallons today. These advancements in combustion technology have come through private innovation and competition. Liquid petroleum product come into New England and are delivered to end user via pipeline, rail, barge, and over-the-road transport, an extensive distribution infrastructure that was developed privately, without any government policy promoting it or any taxpayer subsidies.

During the blizzards of 2010 when millions of customers were without electricity, the seven days of the October snowstorm of 2011, Hurricane Sandy in 2012, the February nor'easter of 2013, and the events of this winter, these crises which happen every single year, not one community was left without heating oil or propane. This is an industry and an infrastructure that works when the darlings of public energy policy fail.

Our industry will continue to function as the supplier of last resort as long as the pro natural gas polices don't send market signals that discourage future investment. When that private investment is undermined, we'll quickly lose our infrastructure diversity. Why do we

care about infrastructure diversity? Because deliverable liquid propane is what we pump into natural gas lines when their pressure drops. When the gas lines utterly fail to meet demand, as they do every single year and they cut off their commercial and industrial customers, home heating oil is what we deliver to those customers to keep the economy moving. That's why we need infrastructure diversity today, and we will need it tomorrow.

To maintain the diversity, the government should ensure a level playing field when it comes to investment. It should be incumbent on natural gas pipeline owners to invest their own capital to expand, just as we must in our industry. One reason for government support of natural gas is the assumption that it will remain cheaper than competing energies for decades. This is false, both historically and in the future.

Is that me?

MR. HANSEN: Yes.

MR. AZIZ: I could go on. Thank you very much.

MR. HANSEN: Thank you. Again, I can't emphasize enough. Please submit your comments in writing.

And now to close this off, Karen Wayland will

make some final comments.

MS. WAYLAND: I want to thank you all for coming and giving us your input. I thank many of you for traveling from all over New England, and not just all over New England, but we also had people flying in from much farther away.

This exercise of soliciting stakeholder comment is not just sort of an exercise to make us feel good. It actually is critically important to the outcome of the Quadrennial Energy Review. In fact, the presidential memorandum that President Obama when he created the QER in January actually specifically contains paragraphs devoted to our direction to do stakeholder outreach. We are joined by somebody from the White House who's been here to emphasize the importance of this process, not just to make sure that we don't redo all the work that you're doing to plan out the work on energy infrastructure investments and the needs that you have as consumers, but because your input is actually going to help tell us where we're going right, where we're going wrong. And this is the second of the meetings that we've had so far, and I can tell you that everyone from the Department of Energy has said to me over

the course of the last few hours and after the first meeting we had, "We learned something new." So this is critically important to the integrity to the QER process.

I want to emphasize again that we do have a Website where you can find more information out about the QER and you can submit written comments. It's www.Energy.gov/QER. You go on there. You can see information about the other meetings, both that we've had and that we're planning. We have announced four more meetings, but there are many more to come. Those meetings are in Portland, New Orleans, Chicago, and North Dakota, the dates to be determined, but they'll be in the next six to eight weeks these four meetings will be done. We will have a number, as I said, of other meetings before we finish the analysis portion of the QER because, as I said, there's no sense in soliciting input after we've already done the analysis, because your input is so critical to that work.

I want to thank Governor Malloy and his staff for hosting us and for helping us put this meeting together and also to my staff who've been here. Some came last night, some were here last week as well, and I couldn't do this

without them.

The final recommendations of this installment of the QER we are planning to release in January 2015. There will be interim products that you can find out on our Website. One of them will likely be a summary of what we've been hearing from stakeholders to date over the next few months. So please keep checking that Website. Your e-mails will become a part of LISTSERV of a list that we'll send out notification so you can get more information.

And with that I want to thank you again for the time that you spent in letting us know your opinion on energy infrastructure in New England. Thank you.

(Whereupon, the meeting concluded at 4:45 p.m.)

* * *

STATE OF CONNECTICUT :
: ss
COUNTY OF HARTFORD :

I, Joanne L. DeMasco, LSR, a Notary Public duly commissioned and qualified within and for the State of Connecticut, do hereby certify:

That said proceeding was reported by me, a Licensed Shorthand Reporter, was thereafter transcribed under my direction and is a true and complete transcription of all testimony given by said witness.

IN WITNESS WHEREOF, I have hereunto set my hand and seal at Danielson, Connecticut, this 1st day of May, 2014.

_____
Joanne L. DeMasco, LSR
Licensed Shorthand Reporter No. 478
Notary Public - Court Reporter
My commission expires 12/31/2016

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