Summary of Presentations and Comments
At the
Quadrennial Energy Review

Stakeholder Meeting #2: Providence, Rhode Island
New England Regional Infrastructure Constraints
April 21, 2014

Opening Remarks

The Honorable Ernest Moniz, Secretary of Energy

Main Points:

1. The United States has an abundance of new hydrocarbon resources in unconventional gas and oil, and at the same time, we are trying to lower our carbon dioxide (CO_2) emissions. As we continue to simultaneously address economic, energy security, and climate risk mitigation challenges, we will explore very different regional variations in this country.
2. The original and continued motivation of the Quadrennial Energy Review (QER) is to address all these issues in collaboration across the federal government. Many agencies have equity and stake in the effort and we will work together to inform the process and bring forth a coherent and sustainable energy policy.

3. A strong focus of the QER is on transmission, storage and distribution of electricity and fuels with consideration to extreme weather implications, modernization for resilience, cyber and physical threats, and other relevant factors including international perspectives.

The Honorable Lincoln Chafee, Governor of Rhode Island

Main points:

1. New England has some of the highest energy costs in the nation and Rhode Island continues to see rate increases driven by pipeline capacity constraints. The problem has become more pronounced, as the region has increasingly transitioned to natural gas for home heating and electricity generation.
2. Pipeline capacity has not kept pace with the transition and demand during extreme winter conditions lead to significant increases in wholesale natural gas and spikes in household electricity bills. Last December, residential rates increased 12% and commercial rates increased 23%. Without action, price volatility will get worse.
3. The region's coal fired power plants and aging nuclear generators are entering retirement and are expected to increase reliance on natural gas.
4. Governors across New England are engaged in a Regional Energy Infrastructure Initiative. In order to save energy efficiency and local renewable energy programs, it will be critical to invest in infrastructure and simultaneously capitalize on low to no-carbon resources such as hydropower to improve energy diversity for the region.
5. Proposed legislation will position Rhode Island to empower utilities and rouse collaboration with appropriate agencies to advance regional natural gas pipeline, north to south electricity generation and transmission, and to continue to support wind and solar power as part of the region's energy mix.

The Honorable Jack Reed, U.S. Senator (D-RI)

Main points:

1. The regional variation of energy prices in New England is staggering. The region has seen extraordinary increases in energy prices over the last couple of winters. Home heating and natural gas prices increased by 47%, and electricity by 20% above the national average.
2. In January of 2014, spot prices for natural gas prices in Rhode Island hit about $80 million/Btu, whereas other parts of the country were seeing $6/ million Btu. This is one of the most significant issues New England will face regionally in terms of economic growth and economic prosperity.
    - In New England, about 45% of electricity generation comes from natural gas due to the need to meet stringent EPA clean air requirements due to the transmission effect of pollution that travels to New England from other parts of the country that benefit from lower energy prices.
3. The region needs to work on pipeline capacity, along with the expansion of renewable energy, demand reduction, and weatherization of buildings to cut electricity. The energy issue is central to the regional economy, economic growth,

and jobs. New England wants to be part of an energy resolution in the U.S. and at the forefront of new energy technologies.

Audience Questions and Answers to VIP Panel:

Commenter Name: Rob Thorton
Organization: International District Energy Association

1. *As you look at infrastructure investments, what about combined heat and power (CHP), district energy, local resiliencies? Should we be looking at micro-grids and strengthen the grid by harvesting and reusing heat from power plants? Is that something we should look to the QER to help?*

Secretary Moniz

- Yes, micro-grids and distributed generation are a very strong focus and part of the QER.
- With regard to combined heat and power, there remains a tremendous capacity in large-scale CHP infrastructure in institutions, hospitals, and shopping malls. Smaller scale residential and micro-CHP will need to see additional cost reductions to increase its market penetration and competitiveness. As witnessed in other countries, district heating can be extremely effective and economical.
- The QER will have a section to identify opportunities for district heating in the U.S.

Commenter Name: Greg Garritt
Organization: Prosperity for Rhode Island

2. *How do we get real about climate and understand that Rhode Island will need to plan for a shrinking economy to reduce reliance on fossil fuels and the environmental impacts associated with their use?*

Senator Reed

- We need a multi-faceted approach. It cannot be more production of energy and better distribution. It has to be demand reduction and looking at alternative clean energy technologies.
- We need to continue to grow. The question is whether we will grow based on existing or new technologies. New England can expand offshore wind to grow our new renewable technologies capability.
- In addition, old pipeline infrastructure resulting in methane leakage can be replaced to increase efficiency and reduce emissions.

Governor Chafee

- New England was the birthplace of the industrial revolution. It all started with hydropower and has come full circle with access to reliable and clean hydropower from Quebec and Labrador.

- We have the opportunity to be the green energy capitol of North America if we work together. This region was once world renowned so I dispute the premise that we need to see the economy shrink. We want good jobs for people in this region.

Secretary Moniz

- Our policies are geared toward continued economic growth with cleaner energy, demand side management, and energy efficiency. There is no solution to meeting both economic and environmental goals without contributions from the demand side.
- Part of it is technology and energy efficiency programs. Rhode Island is already a leader in energy efficiency.
- The President and Administration are committed to an all-of-the-above approach even as we address climate change mitigation. We set a goal to reduce greenhouse gas (GHG) emissions by 17% by 2020 relative to 2005, and we are approximately halfway there. Natural gas has been a driver of CO_2 reductions as a substitution to coal in power generation. However, non-CO_2 emissions remain the highest priority because they are the most persistent in the atmosphere.
- There are important contributions and opportunities from non-CO_2 gases, such as methane, where replacing the old gas distribution systems can have enormous environmental and economic impacts.
- If we do not continue our economic growth it will be difficult to sustain climate change risk mitigation efforts.

Commenter Name: Mark Pemby
Organization: American Lung Association of the Northeast

3. *Where do you see opportunities for collaboration and cooperation to address pollutants contributing to ozone issues in the Northeast? Also, natural gas has the potential to be a bridge fuel, but it needs an end point. Is there a plan to wean us off natural gas in the near future?*

Secretary Moniz

- There is a plan. We have a very robust technology development program for clean technologies across the innovation chain in research and development, demonstration, and deployment.
- The key is cost reduction of low-carbon solutions. Lowering costs will allow for stringent policies needed in the long-term. What we see in this bridge context and natural gas revolution is that today's innovations, such as vehicle efficiency standards and developments in alternative fuels and electrification, are giving us time to reduce CO_2 emissions in the near-term, and time to develop long-term solutions across the board in energy efficiency, renewable energy (including solar, wind, geothermal and hydropower), nuclear power (looking at smaller modular reactors for the 2025 timeframe) and carbon capture at a large scale to enable a clean fuel economy.

- Innovation is critical for meeting or low-carbon and energy security challenges and for having our economy grow in a carbon constrained environment.
- The clean energy markets are forming internationally. Ceres, a clean energy group, estimates that over the next 40 years, the clean energy infrastructure need will be roughly $1 trillion per year globally. That's the future market we want to lead.

Panel I: Infrastructure Needs for Heat and Power

*NOTE: All speaker presentations are posted on the QER webpage at: **www.energy.gov/qer***

Presenter Name: Anthony Buxton

Affiliation: General Counsel, Industrial Energy Consumer Group

Main Points:

1. Last winter the citizens and businesses of New England spent more on natural gas and electricity than they should have. Virtually everyone agrees we need more natural gas pipeline capacity. The challenge is to find the solution.
   - On a given winter day, one million Btu coming out of the Marcellus Shale sold for $2.86. When the gas got to New England it cost $32.88 because of the basis differential premium due to pipeline constraints. The shortage of natural gas pipeline capacity not only raised electricity prices, but it also exacerbated the human problem by forcing numerous manufacturing plants to close on a regular basis.
2. A recent study prepared for the Industrial Energy Consumer Group shows that 2 billion cubic feet (bcf)/day of additional pipeline capacity is required to eliminate the natural gas price differential between New England and pricing points to the west and south of the region.

- We commend the New England Governors for recommending a 1 bcf/day increase. The study shows that the Governors' recommendation will be very helpful but not enough to eliminate the price differential.

3. The time needed to address the climate problem is limited. The existing paradox is having the lowest cost supply of natural gas on the planet in the Marcellus shale, 250 miles from New England, and not having the human will to get it here. We have to overcome that and I look forward to working together on a solution.

Presenter Name: Kevin R. Hennessy
Affiliation: Director, Federal, State and Local Affairs, New England Dominion Resources, Inc.

Main Points:

1. Fuel diversity is critical to meeting an all of the above energy solution. Dominion is proud to be doing its part to ensure fuel diversity as part of its operations in New England.
   - Dominion's Manchester Street Power Station (main natural gas facility in Providence) played a key role in the stations' operation during the winter of 2014. In 2010, the plant was commissioned with dual-fuel capabilities that provided lower cost fuel oil replacing gas on days that experienced extremely high gas prices.
   - Dominion's two nuclear units at Millstone in Connecticut achieved a combined capacity factor of approximately 99.5%, during the first quarter of 2014. This was critical for reliable service in New England, given the gas infrastructure constraints as well as other generation problems during a severe winter.
2. With many stakeholders and competing interests and charges, collaboration will be important. In order for us to succeed from an economic, environmental, and reliability standpoint, we all need to be pursuing the same end goal.
   - The Environmental Protection Agency (EPA) is expected to release a cooling water rule next month that may impact the operation of three major nuclear facilities that supply 4000MegaWatts (MW) of power to the New England region. It is critical that we work together to understand our energy reliability and environmental issues and focus on the same goals.

Presenter Name: Joe Rose
Affiliation: President, Propane Gas Association of New England

Main Points:

1. Last winter proved a challenge for propane consumers in acquiring adequate supply at affordable prices. Significant increases in crop drying demand and heating demand created an unprecedented supply shortage in New England.
2. A National Propane Gas Association task force found that New England sells 7% of the nation's propane but has only 1% of the primary storage. In addition, New England is the only region where the demand for propane is growing.

- A major constraint limiting storage is the ability to get permits in the region. Storage projects take months and even years to permit.
- Rails have become the predominate mode of transport for propane in the region. It is much less reliable than pipeline delivery and reliability goes down during bad weather and peak-demand periods.
- There is only one 8" pipe carrying propane into the Northeast from production areas in Texas and that pipeline ends just south of Albany, New York. Storage is needed along the way in the Northeast to boost pipeline capability during winter months.

3. Even though the U.S. production of propane is increasing at record rates, we need an infrastructure and transportation system that can consistently move propane into storage in regions where it is needed.

Presenter Name: Michael Trunzo
Affiliation: President and Chief Executive Officer, New England Fuel Institute

Main Points:

1. There are opportunities for the Administration to assist New England in addressing its energy future, including: Support for the implementation of a consistent sulfur specification for diesel and home heating oil; maximize refinery capacity, fuel supply and regional storage infrastructure; enhance and incentivize national and regional higher diesel production; promote efficient transportation of crude oil to east coast via rail or pipeline, and support more Jones Act eligible investments.
2. Our industry has a downstream fuel distribution network that is fully operable and ready to deliver a new generation of clean and efficient heating oil to millions of homes in the region. The system was funded by the industry without government support.
    - Today's home heating oil is cleaner, more efficient and moving towards a sustainable product. America's fuel and biodiesel partners are reinventing the industry by increasing biodiesel blend with ultra-low sulfur heating oil to create a renewable fuel.
3. Extensive pipeline expansion is not needed to satisfy competing demands for natural gas, rather adequate planning is needed by utilities and their customers to eliminate and reduce dramatic shifts in demand that cause price spikes. Policymakers also need to address the aging natural gas infrastructure, which is prone to leaks and needs to be fixed, not replaced.

Presenter Name: Andy Ronald
Affiliation: Vice President, Commercial Development/National Accounts Crestwood LP

Main Points:

1. Growing shale production in Marcellus and Utica provides significant new supply of propane in the Northeast. However, the seasonality of propane requires storage in the region but infrastructure is limited.

2. Crestwood's proposed Finger Lakes storage project would include 2 million barrels of underground natural gas liquids (NGL) storage, and provide pipeline connection to all points of new productions and pipeline capacity to terminals in the New England market.
3. Crestwood is prepared to build the facility with private funds. It has completed a strategic risk analysis and satisfied engineering requirements and the facility is ready to be built with the approval. The project has been awaiting state regulatory approval for almost 5 years.

Panel Questions and Answers

1 - What are your specific recommendations regarding appropriate federal roles in helping address New England's energy infrastructure needs for heat and power including possibilities for executive, legislative, regulatory, or administrative actions?

Anthony Buxton

- Specific to natural gas pipeline efficiency, the Northeast Governors, through the New England States Committee on Electricity, sent a letter to the Independent System Operator (ISO) New England asking the ISO to develop a tariff that would be filed and approved by the Federal Energy Regulatory Commission (FERC). It would allow entities to sign-up and contract with FERC and allow construction for pipeline expansion.
- I would ask the Secretary to do what he can within the Administration to make sure FERC takes the steps needed to approve the ISO tariff.

Kevin R. Hennessy

- A critical first step for the federal government will be to have all state and regional entities engaged including DOE, FERC and EPA to address infrastructure issues, priorities, and align common goals.

Joe Rose

- The propane industry would like to see the Energy Information Administration (EIA) increase the visibility of propane inventories and exports so that industry can use real-time data to build better forecasting models based on consumption assumptions.
- Anything that can be done to encourage the approval of storage permitting would provide tremendous stability to the price and availability of the product.

Michael Trunzo

- Connecticut, Rhode Island, Vermont, and Massachusetts are all moving to low-sulfur fuel, in July 2014 and again in 2015.
- Biodiesel production will be an important part of future in the region. Pipeline constraints will not be able to meet demand.

- Dealing with the Jones Act is a large issue. We'll need to figure out how to get Gulf Coast oil up to New England refineries. Industry would like to see the Administration's support for ASTM specification for B20 biodiesel fuel blend stock.

Andy Ronald

- Propane supplies are abundant but we need to get the product to the consumer in New England through pipeline expansion, rejuvenation for natural gas, and increased storage capacity to keep the energy produced in the U.S. and in New England, and avoid exports.
- We have a shelf-ready project to that effect in Watkins Glen, New York that is permitted and ecologically sound. We would like the Administration's support to get the project approved as soon as possible.

2 - What are your suggestions for financial, market, or other incentives to stimulate investments in modernizing energy infrastructure to address heat and power needs in New England? What are the barriers or main investment opportunities?

Anthony Buxton

- We have the mechanisms in the natural gas pipeline area to make the decision and implement decisions. We need people to make the decisions when there is a virtual consensus on what needs to be done.
- We have a problem with inconsistencies of regulatory paradigms in the federal government. One example is air quality. If we can switch people off heating oil in their homes and businesses in New England, we can save 17 billion tons of CO_2 per year. The challenge is deciding to do it and creating the political consensus to making it happen.

Kevin R. Hennessy

- Not in my backyard (NIMBY) and build absolutely nothing anywhere near anything (BANANA) are major problems in New England and tie projects up in litigation.
- Barriers to expanding and building new pipeline capacity exist. The federal government should help ensure that market solutions to expand pipeline capacity do not get blocked.

Joe Rose

- A long-term solution where the government can have a tremendous impact would be to overhaul the existing tax system.
- Doing so would create market certainty and allow businesses to plan and invest in infrastructure knowing the tax implications on their capital investments.

Michael Trunzo

- Federal investment to incentivize increased biodiesel.

- The National Engineering and Scientific Commission (NESCOM) found that blending ultra-low sulfur fuel with biodiesel further reduces SOx, NOx, particulate matter and mercury emissions, and that a 20% blend produces a 16% reduction of CO_2 emissions.
- In the past 10 years, Industry has invested $14 million with no government contribution. These investments helped decrease household consumption of oil for space heating by 40%. At the same time, industry has worked on biodiesel and low-resultant fuels that help bring more efficient appliances into homes and improve system efficiency.
- Additional support from government would be helpful.

Andy Ronald

- Our Finger Lakes project will not require federal financial assistance. It is tailored to the fact that production of natural gas and propane supply will grow in the region.
- Our facility will serve New York, Maine, New Hampshire, Vermont, and Connecticut with product that comes into the facility by pipeline and goes north to where it is distributed throughout New England.
- The federal government can assist with infrastructure and NIMBY barriers.

3 - What are your final thoughts and key messages for the QER team?

Anthony Buxton

- I recommend that we follow the rule our parents lauded which is to finish our homework.
- In New England, utilities, generators, and environmental groups deliberately engineered the transition to natural gas. Many of the plans in 1990s called for transitioning coal power plants to natural gas. Now the same environmental groups that supported that plan are opposing the supply of gas.
- Part of our job is to finish creating the bridge that we described, and using that bridge properly once established.

Kevin R. Hennessy

- Energy policy and energy politics are like oil and water; they do not mix.
- As states are getting together to collaborate, they need to focus on the end goal.
- Stick with fuel diversity, stick to collaboration, and focus on policy with the politics aside.

Joe Rose

- The fact that more consumers are using less energy is a reality.
- Let the free markets work and get out of the way. To have government decide what type of energy we are going to use can be dangerous.

Michael Trunzo

- Focus on an "all-of-the-above" energy solution to keep the U.S. poised to be energy independent.

Andy Ronald

- Today's situation in the Northeast is an opportunity to leverage a cleaner energy supply and bring about improvements in air quality.
- We need to get the politics out of the decisions that inhibit solutions to bringing the product to consumers in the Northeast, at the lowest value.

Panel II: Infrastructure Needs for Reliability and Affordability

*NOTE: All speaker presentations are posted on the QER webpage at: **www.energy.gov/qer***

Presenter Name: Marion Gold

Affiliation: Commissioner, Office of Energy Resources State of Rhode Island

Main Points:

1. Rhode Island's energy use is already on track to decline in the next few years. The Office's models show that Rhode Island has potential to increase fuel diversity in transportation, electricity, and the thermal sector, while producing economy-wide net benefits and reducing GHG emissions.
2. The state's energy plan supports the need for local and regional investments, such as in local renewable energy, and pursuing imports of clean renewable energy from Maine and Canada, investments in transportation and the power grid, and investments in the thermal sector. An "all-of-the-above" clean energy strategy provides a potential for $8.8 to $14 billion in benefits to Rhode Island's economy, but this will require significant investments.
3. We have to act together, including other New England states to spur investments in critical energy infrastructure or otherwise local power systems will become

increasingly vulnerable to service disruptions and consumers will have to pay more than in nearby regions, putting the region in a competitive disadvantage. Energy and efficiency are the lowest-risk, lower-cost resource, with lasting savings for future years, so now is the time to invest in energy-saving and cost-saving programs.

Presenter Name: Bill McCourt
Affiliation: Executive Director, Rhode Island Manufacturers Association (RIMA)

Main Points:

1. Despite the increase in manufacturing productivity, manufacturing energy consumption has remained at the same levels since 1975—thanks to the use of more efficient technologies—while other sectors have increased their consumption. The manufacturing sector has also been a leader in the use of alternative fuels, as industry relies on several different fuel sources to power their operations.
2. New England has a high reliance on natural gas, about 43% of New England's fuel-mix. Industrial gas consumption has also increased, but there are no planned new LNG fueling stations. Driving forces behind what will happen in New England include the retirement of key energy sources, such as nuclear plants, in the next couple of years.
3. New England is a significant consumer of energy and energy efficiency has to be an important player. The Rhode Island Manufacturers Association (RIMA) believes in an all-of-the above approach, and is concerned about the government's decisions to fund one strategy over the other. However, RIMA opposes *Deepwater Wind* because of the impact of electricity costs to local manufacturers. RIMA would like to rely on the private sector and believe that the private sector will come up with the answers, if given the chance. Government control is in smart regulation and not picking winners and losers, when it comes to energy consumption.

Presenter Name: Dave Caldwell
Affiliation: Secretary, Rhode Island Builders Association

Main Points:

1. New England has infrastructure needs but on the end-use side there are opportunities for reducing the use of electricity and heating of buildings through energy efficiency improvements. A few years ago, electricity was not one of the driving forces, but now it is becoming a significant driver to builders in the region. Energy price increases are being passed on to consumers and some of those dollars are not even staying in the local economy.
2. It is important to look at returns over time, rather than focus on quick returns. For example, it might cost more upfront to buy an energy efficient house, but the savings over time will make up the difference of the initial investment.
3. Energy programs, such as DOE's Challenge Home Program, target efficiency improvements in buildings which are good for the local economy and create local jobs.

Presenter Name: Scott DePasquale
Affiliation: President and Chief Executive Officer, Utilidata, Inc.

Main Points:

1. We are currently facing the challenge of increasing availability and reliability of power while reducing our carbon footprint. Advances in communications and information technology (IT) allow utilities to minimize power losses and downtime, and harness alternative distributed power technologies. These changes are leading to the development of the smart grid. However, these smart grid technologies are also making security a prominent and complex issue.
2. The development of a more distributed smart grid requires advances in cyber security. Traditional cybersecurity solutions available today protect IT networks, but IT-based security solutions fall short from protecting critical control and automation functions in the grid.
3. The smarter the grid becomes the more attractive and vulnerable it becomes for hackers. Collaboration between the public and private sectors is essential. It is important that regulators work closer with utilities to support programs and investments in cybersecurity; in parallel with other investments in distributed generation and energy efficiency, and the smart grid in general. It is also important for the government to work closely with the venture capital community to foster innovation in this space. A strong public-private partnership can catalyze action towards a more secure utility of the future.

Presenter Name: Margaret Curran
Affiliation: Chairperson, Public Utilities Commission, State of Rhode Island

Main Points:

1. The Public Utilities Commission (PUC) has no direct control over infrastructure, but questions of reliability and affordability are of tremendous concern to the Commission. Something has to be done to reduce energy prices and price volatility, to provide long-term affordability. New England is paying more for energy than other regions, and this is mostly due to New England's existing infrastructure. New England needs infrastructure that can perform in cold winters. Residential rate payers have been largely protected from tremendous natural gas price volatility, but the price increases that industrial and commercial sectors have seen will be coming to the residential sector.
2. The PUC does not advocate any particular solution, but sees that increasing fuel delivery and transmission in New England involves creating new generation and energy efficiency within the region's borders.
3. The fact that this last winter was just a small taste of what is to come should have all players and all solutions on the table. I look forward to continuing to provide the DOE and the QER Task Force with our perspective.

Panel Questions and Answers

1 - *What are your specific recommendations regarding appropriate federal roles in helping address New England's energy infrastructure needs for reliability and affordability including possibilities for executive, legislative, regulatory, or administrative actions?*

Marion Gold

- The QER is incredibly important. We need to come up with a solution for this and appreciate the fact that Senator Reed and Secretary Moniz are aware of the problems of New England and are watching closely for opportunities to advocate.
- These issues are incredibly complicated and it is important we have the resources in the state to deal with them, which in some cases requires the need for federal funding along with technical assistance.
- We have some terrific national research laboratories run by DOE and one of the perennial challenges is getting that information out to the public.

Bill McCourt

- Part of the government's role is to set smart regulations. This is a global market place and businesses provide a very real benefit vehicle. We are not just the abusers of the environment and the abusers of people; we provide high-quality, well-paying jobs, and career pathways.
- It is very encouraging to see that we are setting a policy, but we need to stop picking winners and losers and let natural competitiveness come to play.
- From an environmental standpoint, we often increase regulations on air emissions but because of the costs imposed on some of the local businesses we end up importing products from competing nations across the globe that are not nearly as efficient as the U.S.

Dave Caldwell

- Conservation, efficiency, weatherization, distributed generation–photovoltaics, wind, thermal, and hydro are becoming very cost effective in the Northeast. It is more cost-effective to put in photovoltaics in Connecticut than in Arizona.
- How do you keep dollars in the economy, create good jobs, and show the consumer that this is money well spent? We all agree we want to do what's good for the environment and move clean energy forward.
- We are exporting some of these jobs to China and other overseas countries who are epic polluters. The best thing we can do is help develop an economically and environmentally sustainable future.

Scott DePasquale

- Reliability comes from systemic long-term planning, and involves working with regulators at the state level and the federal government to understand what the right balance is between investments in infrastructure and security; understanding that not everything is practical and there are rate payer expenses associated with these investments.
- We are building a smart grid and hoping that it makes resources available in a very economical way. To do that we have to invest in parallel in national security. To me, it makes sense for the federal government to play a role in catalyzing research in that area and make sure that we are building those technology capabilities in tandem.
- Work at the state level, from regulators, could really help us think about how we make those investments and rationalize it for rate payers. Coming out of six years of a tough economy, there are dollars that are spent well and others that are not, and it has been a learning process.
- We cannot afford be insular and I would like to see more investments being made in technology, particularly on the cyber side, by DOE.

Margaret Curran

- I recommend that DOE, to the extent that it can, assist with the appropriate federal rules to drive forward the current needs of New England.
- We also need more support from the FERC to help drive all the infrastructure changes that New England needs.

2 - What are your suggestions for revising existing, or developing new, public-private partnerships involving state, regional, and federal agencies for addressing New England's energy infrastructure needs for reliability and affordability?

Marion Gold

- There is an opportunity in the infrastructure area in terms of providing financing, if we can get the public-private partnership together to leverage funds to build up our energy infrastructure.
- We have changing demographics, caused by growing immigrant populations. We have more people living in rental housing, and they cannot afford to make some of the investments that others can make.
- There are models available for leveraging private-public capital to help transform our system, such as what we have done in the clean water area.

Bill McCourt

- The aging infrastructure in New England, such as natural gas pipelines is a concern, and we acknowledge the fact that addressing this infrastructure issue is a significant investment.

- The business community needs to get involved in trying to find creative solutions to solve these challenges; and government agencies need to embrace their involvement.
- Businesses have worked together many times to find solutions collectively, through innovation and research. We need to get them to sit around the table, with government players, to outline some of the strategies and identify how we can help tap into the business community to come up with some solutions.

Dave Caldwell

- Performance-based Building (PPB) and P3 projects are excellent models in terms of scare government resources.
- We are losing a lot of money with the rental population, with enormous economic impact. Closing that gap could be a substantial economic win for Rhode Island's economy.

Scott DePasquale:

- If you have aging infrastructure and you cannot replace it due to costs, you can start with intelligent devices and use resources like photovoltaics and batteries to solve these problems and reduce our environmental footprint.
- On the security side, the Department of Homeland Security and various government agencies have been working in critical infrastructure for a long time but, by and large, utilities have no insight about what the government is learning.
- We would like to see a working group with the utilities to give them more access to information in appropriate ways, so we can get utilities to understand IT security constraints. We think there could be better interaction and that DOE could facilitate this interaction.

Margaret Curran

- We would like to encourage all of the creativity that has been expressed by the panel members to improve the reliability and affordability of energy.

3 - What are your priorities for addressing potential technology gaps related to energy infrastructure needs for reliability and affordability in terms of research, development, demonstration, and analysis activities?

Marion Gold

- There is amazing research going on at DOE's national laboratories, such as the National Renewable Energy Laboratory (NREL). Perhaps we could send someone to Golden, Colorado and come here to work on technology development.
- In Rhode Island the issues of the smart gird, cybersecurity, and energy storage are of paramount importance and we are going to need DOE-level research and development involvement.

Bill McCourt

- We have to worry about cybersecurity hacks and breaches.
- In research and development we need reliance on the private sector and embracing R&D from the private sector.
- There have been inordinate discoveries by the private sector that government leveraged and took into its domain. Those things happened because the public sector had a need to tap into that potential.
- We need to add stability to research and development and embrace the private-sector discoveries. We need to do a better job at taking some of the technologies developed by the private sector and perhaps being more open about rules and regulations.

Dave Caldwell

- We have been fortunate to work with DOE's Buildings Technologies Office. The program has been doing some excellent work and has been an excellent resource. I hope they keep moving in that right direction.

Scott DePasquale

- It seems as if a lot of investments are going into the delivery of energy, but commercial and industrial customers also have the opportunity to become a little less reliant on the grid. Building automation systems that help customers more intelligently manage their own usage, and the development of micro grids and the ability for communities to island themselves is going to be very important.
- With regard to research and development, we need to look at how these micro grids are going to maintain their reliability.

Margaret Curran

- We encourage research and development in areas that provide economic advantage for rate payers, such as storage, energy efficiency, and demand reduction.

4 - What are your final thoughts and key messages for the QER team?

Marion Gold

- There is really good work going on in the state and nationally in preparing our nation's energy systems to be more resilient to climate change-induced weather events and sea-level rise.
- The Governor's Executive Council on Climate Change is focusing on both climate adaptation and mitigation. We are working very closely with partners and utilities.
- It is really important to look at what's happening internationally, because we do not just want to be transferring our problems over to China.

Bill McCourt

- We are very quick to condemn some older technologies based upon what we knew at that point in time and what we fail to embrace is that every day, things are changing. Every day, people are working to make things more efficient. For example, we need to keep an open mind on approaches such as fracking.

Dave Caldwell

- We need a more collaborative role, and there is an opportunity for DOE to have a leadership position.

Scott DePasquale

- In five years, we will have ten times the number of devices connected to the internet. That means that an international conflict could have a real impact on whether you get power in your home and your business.
- We need to invest in national security and these investment needs are at the state level as much as at the federal level.

Margaret Curran

- The current level of collaboration and cooperation in the region and nationally is one of the most heartening things we can now see in the horizon and this will help ideas get pulled into practice.

Public Comments

The public is encouraged to sign up to provide comments, and each commenter is allowed three minutes in which to make them. Each commenter was asked to approach one of the standing microphones as their name was called, introduce themselves, and make their

comments. On the stage representing the DOE were Levi Tilleman and Colin Bishopp, Senior Advisors in the DOE Office of Energy Policy and Systems Analysis.

The U.S. Department of Energy encourages everyone to file written comments at QERcomments@hq.doe.gov to ensure a wide variety of public input into the QER process. Each set of comments is reviewed and considered.

Public Commenter Name: Jerald Katch
State: RI
Commenter's Main Points:

1. I've been disappointed in the decades since I've been involved with the first Earth Day. There's been so little education in schools about the seriousness of the climate crisis. I am wondering if Commissioner Gold has thoughts on how to integrate our education system with the QER process to develop a much stronger education policy.

Public Commenter Name: Rob Thorton
Organization: International District Energy Association
State: MA
Commenter's Main Points:

1. The last QER cited the inefficiency of power plants (32% efficiency) as the gorilla in the room. We are wasting two-thirds of the fuel going into our power stations as waste heat. In fact, 36% of all the energy consumed in U.S. is wasted as heat. A case in point is Brayton Point Station near where the Secretary grew up. For 50 years since 1964, it has been wasting 47 trillion Btu/year, on average, into Mount Hope Bay. The last owners invested $580 million in cooling towers, so instead of the waste going into the bay, the waste goes up to the sky. If this were Denmark, Germany, or Sweden, the waste would be put into pipes and used to heat the city, instead of wasting $400 million/year in useful heat.
2. Kendal station near MIT has also been wasting heat in the Charles River. In order to comply, a power plant investor put a pipe between the plant and downtown Boston. Now, they are heating Mass General Hospital and 150 buildings in downtown Boston. The efficiency and resiliency gains on this are dramatic. This pipe has the equivalent emission reductions of 600 football fields of photovoltaics.
3. With Super Storm Sandy, the power plants that stayed on were district heating and combined heat and power plants with Princeton and Co-op City. I would argue that the QER should take a very hard look at local infrastructure like district energy and combined heat and power.

Public Commenter Name: Scott Gustafson
Organization: Laborers' New England Region
State: MA
Commenter's Main Points:

1. During the economic recession, no workforce was hurt as much as the construction workforce. The Kingdom Morgan Project has meetings this week on the construction

of a new pipeline through northern Massachusetts. We support those jobs. I think there is an opportunity to create more jobs and economic benefit if we support all types of energy infrastructure. We just completed the Tenneco Valley 80 mile pipeline project in Maine, and were able to train and employ 300 staff to build out the new distribution infrastructure throughout the state of Maine. We can continue to do that. We have two of the best training centers right here in Hopkins, Massachusetts and Hartford, Connecticut. We are connected to Helmets to Hardhats and other programs that support returning veterans.

Public Commenter Name: Jeff Petrash
Organization: National Propane Gas Association
State: DC
Commenter's Main Points:

1. The QER process is very timely for us because the propane situation both in New England and the Mid-West is almost entirely an infrastructure problem. There are issues with primary, secondary, and tertiary storage; NIMBY issues; rail congestion; pipeline pumping capacity; and truck terminal offloading capacity. Propane also comes by ship. The irony of this winter is that we exported propane from Texas to Europe, and imported supply from Europe to New England. Yet, we have no capacity to move propane from Texas to New England.
2. Another issue is infrastructure transparency. There is a considerable lack of transparency in the way pipelines are regulated. No one other than the pipeline knows what is moving through it and at what volume. The Energy Information Administration needs to fine tune their data to make storage inventories more localized, separate price data for propane and propylene, and collect data based on different kinds of sales. The lack of data on transmission and energy prices needs to be addressed in the years ahead.

Public Commenter Name: Greg Garritt
Organization: Prosperity for Rhode Island
State: RI
Commenter's Main Points:

1. Many existing resources are focused on fracking. If the people of the Unites States stop fracking, then the investments on pipelines infrastructure will be wasted. The resistance is growing and the DOE needs to understand that it will continue to grow.
2. Hydro Quebec is part of 500 years of genocide. It is the killing of the forest people that destroyed their culture. It started in New England with the swamp massacre. Hydro Quebec is removing people from the land.
3. We need to conduct full cost accounting. Currently, we do not properly account for the cost of growing GDP. For Instance, disasters like Super Storm Sandy are accounted as growth in GDP. If we actually start to do full-cost accounting, we will find that most of the growth is uneconomic growth.

Public Commenter Name: Lisa Petrie, Stay at home mom and a concerned citizen

State: RI
Commenter's Main Points:

1. Twenty years from now it will not matter what the price of natural gas was in 2014, 2017, or 2020. The only thing that will matter is whether we've avoided catastrophic global warming. Natural gas is a false solution to the climate crisis. Yes, it burns 50% cleaner than coal but it's very misleading as it leaves out the serious problem of methane leaks in the extraction and transport phase. Methane is extremely potent. It is about 23 times more potent than CO_2 over a 100-year period, but 80 to 100 times worse over a 10 to 20 year period. Cornell University researchers have found that the overall greenhouse gas footprint of fracked gas is worse than coal over a 20-year timeframe. The next 10 to 20 years will be pivotal if we want to avoid catastrophic climate change.
2. Another problem with natural gas as a bridge fuel is the idea that we will grow a for-profit industry like natural gas and expect it to step aside when we are ready for renewables. Look at the track record of the oil industry. The industry has spent millions of dollars blocking renewables. The more we invest in the natural gas industry, the more we are feeding the beast we need to subdue if we want to stop global warming.
3. The International Energy Agency (IEA) warned, in 2011, that anything built now that produces carbon will continue to do so for decades, and this lock-in effect will be the single factor most likely to produce irreversible climate change.

Public Commenter Name: Wendy Lucht
Organization: Ocean State Clean Cities
State: RI
Commenter's Main Points:

1. Ocean State Clean Cities built 50 electric vehicle-charging stations with Recovery Act funding from the Office of Energy Resources. The challenge we face is the need for additional resources to deploy alternative fuels for transportation. We need continued support to invest in clean energy infrastructure.

Public Commenter Name: Art Handy
Organization: American Lung Association
State: RI
Commenter's Main Points:

1. We need to bring costs down to public health and other pieces of the equation as we look at our energy infrastructure and take steps to prepare for climate change. The fundamental impacts in Rhode Island are high asthma rates and the inability to control ozone and other particulates that come over from energy production in the Midwest. I appreciate DOE looking for opportunities to cooperate. Please look for ways to bring the public heath external costs and benefits into these energy projects. Public health and climate impacts are fundamentally important in the long-term and I urge everyone to work together.

Public Commenter Name: William Garret
State: RI
Commenter's Main Points:

1. Last year, the Intergovernmental Panel on Climate Change (IPCC) and IEA released three very important documents. They state that we are increasing global temperatures and warned that we are experiencing the impact of global warming now.
2. In looking for ways to cut global warming emissions we must recognize that 70% of the oil in the world goes though combustion engines. IEA predicts oil consumption will rise by 4 billion gallons/day and 1 trillion gallons/year. These engines and the oil market are the second largest contributors to global warming emissions. We need to focus on greater efficiency in this market and renewables and other fuels.
3. Improved technologies significantly increased the efficiencies of over a billion internal combustion engines, and opened them up to renewable fuels such as hydrogen. The market presents great opportunity to move in a direction and make a major impact on cutting emissions.

Public Commenter Name: Charlie Meyers
Organization: Massachusetts Hydrogen Coalition
State: RI
Commenter's Main Points:

1. The U.S. started to say it would shift transportation onto the grid to clean it up. In doing so, we are making transportation something as a component to the grid. I do not see much discussion on making zero-emission electric vehicles part of the grid. In the Northeast it will impact natural gas demand. Plug-in electric vehicles and hydrogen fuel cell electric vehicles will offset the efficiency gains we make. We can make hydrogen on a site-based approach with no need for distribution. The vehicles that we are putting on can serve as energy storage play for the grid.
2. I'd like to suggest that we spend more money on infrastructure, research, and efficiency associated with infrastructure because they will be playing a greater dependency role on the grid and interfacing with it for fuel demand.

Public Commenter Name: Bridgette Bryan
Organization: Emerald Cities Providence
State: RI
Commenter's Main Points:

1. I want to emphasize the importance of energy efficiency in these discussions and as part of an overall energy plan. Existing buildings use 70% of energy, which presents a great opportunity to address supply and demand issues, and to reduce consumption. There are additional opportunities for greater economic impacts in job creation and creating economic equity.
2. I agree with Commissioner Gold's comments about opportunities in public partnerships. We need greater interdepartmental cooperation to address

opportunities for energy efficiency. Community and government programs should collaborate and include energy efficiency as part of existing programs, such as public housing.

Public Commenter Name: Bert Curry
State: RI
Commenter's Main Points:

1. I want to comment on smart grid technology. It has been pointed out that wireless technologies for smart grids are vulnerable to hacking as well as sunspots. Sunspots can disrupt satellites that rely on wireless technologies. I would hope that smart grid technologies are being developed with a combination of wireless and wired capabilities and are designed to operate either way.

Summary of Presentations and Comments
At the
Quadrennial Energy Review

Stakeholder Meeting #2: Hartford, Connecticut
New England Regional Infrastructure Constraints
April 21, 2014

Opening Remarks

Commissioner Robert Klee

Main points:

1. We are very pleased to have the U.S. Department of Energy soliciting regional input for the Quadrennial Energy Review (QER) process. Energy policy has been a major aspect of this Administration's tenure and will continue to have a prominent position going forward.

The Honorable Ernest Moniz, Secretary of Energy

Main Points:

1. The motivation behind the QER is to bring colleagues from across government together to review energy policy to examine a variety of issues faced by stakeholders across the country.

2. The infrastructure issues which are being reviewed in the first year of the QER are regional by nature. In the Northeast one of the main transmission-based issues is the infrastructure constraint facing the region.
3. Another issue facing the region and in the news this past year was the tremendous strain placed on the infrastructure in the Northeast due to severe weather conditions (Super Storm Sandy, Polar Vortex ,etc.). We are looking to the region to help propose solutions to these issues.

The Honorable Dannel Malloy Governor of Connecticut

Main points:

1. Families and businesses in the state of Connecticut have for too many years paid some of the highest energy costs in the country. A major focus of the Administration was developing a long range energy plan, with the core of this plan focused on energy efficiency.
2. The region faces reliability concerns due to the severe storms that impact the region. Research and development of micro grid systems to ensure reliability in the face of such storms is underway.
3. The State has seen a tenfold increase in renewable energy generation since 2010, and under the current Administration opened the first Green Bank. 3.5% of the State's electricity needs will come from a new contract for the purchase of energy created with renewable resources.
4. It will take some time to have renewable energy become a major percentage of the State's energy needs and the bridge fuel to get us to that time is natural gas. It is the cheapest fuel source available to businesses and homeowners and the State is looking to increase the delivery infrastructure needed to bring the fuel to these intermediate and end users.
5. Realize that we cannot fully fund projects using collected rates. As a small state, Connecticut is limited to what it can achieve. We have teamed up in a six states in a partnership to bolster natural gas delivery infrastructure throughout the Northeast.

U.S. Representative John B. Larson (D-CT)

Main points:

1. Having a comprehensive energy strategy is a major accomplishment for the State, and it is the first in the history of the State. Recognition that the regional issues being discussed have an impact on residents, business and commerce.
2. Bringing the New England states together will be important to help drive the legislation needed to support the region's energy goals and concerns.
3. Natural gas is "abundant, American and ours," hence, we should utilize and harness this great resource and developing the infrastructure needed to do so is the next step for the region.

U.S. Representative Elizabeth Esty (D-CT)

Main points:

1. Connecticut is a small but mighty state. In looking toward the future, we see key issues being affordability, efficiency and development of systems while continuing to consider impacts to the environment.
2. In a recent town hall meeting, two questions regarding energy policy were asked. The first question was in regard to affordability and the second question was on how energy policy will impact the environment; it is obvious that the public has the same concerns.
3. Connecticut had the highest heating costs for any state in America this past winter.
4. We are looking to expand natural gas availability while simultaneously pushing the expansion of local renewable power. The Renewable Energy Act would reopen two 100 year old hydroelectric dams in Canton, Connecticut.
5. The Green Bank Act would establish a national green bank for qualified green/clean energy projects. It would be supported with $10 billion in green bonds, and would also be used to co-charter state level green banks. The importance of predicable funding on clean energy projects cannot be underestimated.

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

*NOTE: All speaker presentations are posted on the QER webpage at: **www.energy.gov/qer***

Presenter Name: Gordon van Welie
Affiliation: President and Chief Executive Officer, ISO New England, Inc.

Main points:

1. There is a regional shift occurring due to the retirement of generation. Along with this shift we are experiencing a decline of performance or resources. This is a reliability challenge.
2. The region lacks the pipeline infrastructure to meet the load demand generated.
3. We should create a forward capacity market to allow fuel arrangements to improve performance.

Presenter Name: Thomas May
Affiliation: Chairman of the Board, President and Chief Executive Officer, Northeast Utilities

Main Points:

1. Right now there is an opportunity for the DOE to visit New England and discuss its energy infrastructure needs.
    - This past winter exposed the limits of regional infrastructure. The natural gas infrastructure constraints cost customers in excess of $3billion this past winter heating season.
2. We will not achieve our greenhouse gas goals without using Canadian and northern U.S. resources and non-traditional generation.
3. We have seen that market pricing incentives have not worked in controlling demand or prices.
    - The NESCO initiative calls for expanding natural gas infrastructure to address rising prices due to demand.

Presenter Name: Tom King
Affiliation: President, National Grid US

Main Points:

1. Infrastructure is required to address the problems. Solutions have to be economic, environmental, but also resilient.
2. To meet clean energy goals, additional electric transmission has to be built. There are opportunities to expand service if the capabilities are provided, i.e. building an undersea cable to connect to offshore wind in Rhode Island.
3. The region needs a market structure to incent generators make commitments. These commitments must be coupled with legislative and regulatory mechanisms to protect customers.

Presenter Name: Bill Yardley
Affiliation: President and Chief Executive Officer, U.S. Transmission and Storage, Spectra Energy

Main Points:

1. This past winter has shined the spotlight on the region and its inadequate pipeline infrastructure. This infrastructure can be improved with the right contracting mechanisms.
    - An Interstate Natural Gas Association of America (INGAA) Foundation report estimated that approximately $640 billion, or roughly $30 billion per year, in midstream investments will be required to accommodate the development of natural gas, oil and natural gas liquid resources through 2035. Capital requirements for new gas infrastructure alone total $313 billion over the next 22 years, according to the INGAA study.
2. The region has become increasingly reliant on natural gas-fired generation facilities without contracting for pipeline capacity on a firm basis to ensure access to supply. Currently, over 50% of electricity in New England is produced using natural gas.
    - While many power plants have connected with the pipeline grid, these generators continue to largely rely on short-term capacity release or "interruptible" services to access supply from the pipelines. These strategies are increasingly straining power market reliability as those who have subscribed for firm pipeline service (i.e. gas utilities) utilize that contracted capacity at growing frequency.
3. Regions with restructured electricity markets present real challenges. This is especially the case when such markets are capacity constrained and rely heavily on natural gas-fired electricity generators. The region has far to go in resolving the disconnect that has caused its consumers to pay such a premium for natural gas and electricity.

Panel Questions and Answers

1. *Is there a Federal role in addressing New England infrastructure needs?*

Gordon van Welie

- The DOE cannot solve this problem, but they can put the spotlight on it and help to build the avenues to a solution.
- The linkage was broken when the wholesale electricity markets were restructured. The result has been the New England wholesale market became focused on the short term. This is the problem that has to be solved in New England.

Thomas May

- DOE can play a key role on focusing attention around this issue. We have to bring together the parties that need to address it. This is a local New England issue and we

need the DOE to encourage the region's states to come together and have a common agenda.

Tom King

- The New England government initiative is aligned with our infrastructure needs. We must seize on this opportunity. DOE can help push this initiative through as the mechanism that gives us the path to getting the infrastructure built.

Bill Yardley

- DOE can take on the role of highlighting this regional issue.

2. *You have all mentioned the idea of stimulating investment, or restructuring the market. This undertaking seems complex, and involving many players and many perspectives. What is the path forward for getting these perspectives together and developing a solution?*

Gordon van Welie

- Generators need to have a strong incentive to firm up fuel arrangements. They need to be paid to take on long term commitments to ensure that when generators are called on to run fuel, we have made changes needed in capacity markets to have prices for long-term generators. There is still the question of will this be sufficient to get generators to sign up for new gas pipelines.

Thomas May

- Special interests are starting to dominate the issue. This issue instead needs to be examined from a regional perspective.
- We need to lean on local utilities to make long-term commitments, with the right regulatory structure and incentives in place.

Tom King

- I would like to add that this is also an economic and environmental issue that addresses the importance of clean resources.
- Ultimately, there has to be a value associated with capacity.

Bill Yardley

- We have clean resources at our doorstep- there is an opportunity here.

3. *The theme today has been one of regional coordination, regional partnerships, and public-private partnerships. What are barriers to maintaining these partnerships? How can DOE help resolve any conflicts?*

Gordon van Welie

- All the initiatives are combined into a large regional package deal, making it difficult to come to a consensus.

- The pipeline issue needs to be addressed. DOE needs to help make sure that this issue is addressed immediately. We cannot survive another winter like this past winter.
- Many states have greenhouse gas reduction goals. How are these incorporated into a short-term or long-term objective?

Thomas May

- We are looking to the FERC to get through cost allocation barriers. FERC's authority to allocate costs in a traditional way needs to be taken one step further.
- FERC needs to come to a majority opinion so that we can allocate costs across New England.

Tom King

- We have been dealing with these issues for years- this winter just happened to exacerbate these issues.
- The role DOE can play is to keep the importance of these issues in the forefront of everyone's mind.
- DOE should check in frequently with the states and ask if the issues have been resolved and keep them at the top of the agenda.

Bill Yardley

- Nothing planned or underway for electric generation- new infrastructure for this will take at last 4 years to get underway.
- We need more certainty and streamlining to the permitting process.

4. *Closing Thoughts from the Panelists?*

Gordon van Welie

- DOE was effective in previously highlighting regional transmission congestion. They should undertake a similar role with New England pipeline congestion.

Thomas May

- This issue is very serious for the region. In the spring, when electricity rates fall, customers will forget about the constraints until next winter. We need DOE to help us stay focused. DOE can keep the pressure on us by keeping the issue in the public domain.

Tom King

- I would suggest that we are near a crisis. If this issue is not addressed, will have a problem heating homes and keeping the lights on in the near future.

Bill Yardley

- I agree with the previous commenters; we need DOE to keep the pressure on this issue.

Panel 4: Infrastructure Needs: Challenges and Solutions

*NOTE: All speaker presentations are posted on the QER webpage at: **www.energy.gov/qer***

Presenter Name: Glen Poole

Affiliation: Manufacturing Support Manager - Energy, Verso Maine Energy, LLC

Main Points:

1. By eliminating the use of coal, and nearly eliminating the use of oil in our factories by switching to a cogeneration national gas/steam cycle, we have been able to meet the DOE's better plants pledge in our two paper mills.
2. While we are a short snowmobile ride away from the cheapest gas (Marcellus), the pipeline is 2 miles short of being where it needs to be to provide access to the region.
3. Consumers are paying extra for their energy and it is affecting not only their home heating and energy prices, but in some cases is keeping them out of work.
4. More pipeline must be installed. FERC needs to make this happen and the DOE can help facilitate that process.

Presenter Name: Lawrence J. Reilly
Affiliation: Principal, Rosewood Consulting, LLC; Board Member, Vermont Electric Power Company

Main Points:

1. We should understand the need for additional natural gas pipeline coverage, but we must be careful to not overinvest in such infrastructure. Striking the balance between too little and too much investment is a difficult process.
2. We have a three-pronged approach to help alleviate transmission capacity issues:
    - Implement all cost effective technology;
    - Expand to the fullest extent possible price responsive demand programs;
    - Integrate energy efficient technology into all plans.

Presenter Name: John F. Bilda
Affiliation: General Manager, Norwich (CT) Public Utilities, Past President of Northeast Public Power Association

Main Points:

1. Two concerns by end-users are reliability and affordability. Currently there is a shortage of natural gas pipelines to supply natural gas generators with access to available supply.
2. Determining who will pay, who will own, and who will manage the technology and infrastructure being installed must be determined quickly as the reliability of the bulk electric system is at risk if infrastructure upgrades are ignored.
3. Would look at reviewing the ISO mission as the regular middle class citizen is not being served properly by the organization.

Presenter Name: Peng Zhang
Affiliation: Assistant Professor, University of Connecticut

Main Points:

1. During 2011 there were two major storms that caused significant power outages across the State. Through the use of micro grids, the University of Connecticut did not lose power once.
2. Micro grids provide multiple benefits to the power system, provide frequency and voltage support and control leading to a reduction of grid loss and increased system reliability, allows for easier incorporation of renewable energy resources into the grid, and can assist with peak load reduction and ability to assist with demand side management of the system.
3. Continued research and development into micro grids is needed to help support communities in the Northeast.

Presenter Name: Rick Terven
Affiliation: Executive Vice President, United Association of Journeymen and Apprentices of the Plumbing and Pipe Fitting Industry of the United States, Canada & Australia

Main Points:

1. Pipeline development creates thousands of jobs for workers and will reduce energy costs and increase energy resilience.
2. Aging pipelines are a concern for this region (i.e. the New York City Harlem apartment building explosion due to aged pipeline). Replacing old pipelines should be a major priority in order to improve public safety, reduce emissions and to create jobs in the region.
3. The Massachusetts Department of Public Utilities has incentives for gas companies to replace aging pipeline. Programs like this need to become the rule, not the exception for the industry.

Panel Questions and Answers

1. *Hear an overall sense of urgency from the group – How do you balance the priorities and where do we start?*

Glenn Poole

- Get new pipeline installed in New England to get the natural gas stored next door to the people who rely upon it.

Lawrence Reilly

- Continue to work as a region in the meetings established between the six New England states to find a common vision to push in Washington DC and implement here at home.

John Bilda

- Continue to think long-term as well, increasing pipeline coverage is a short-term solution; remember that experts can be the enemy of innovation.

Peng Zhang

- Continue to promote the R&D of micro grid systems.

Rick Terven

- Continue to promote long-term thinking and taking the "all of the above" approach to energy efficiency – finding and implementing sustainable approaches.

2. *What do you think the key takeaways from the QER should be?*

Glenn Poole

- Keep the pressure on FERC to help solve the pipeline shortage issues in the region.

Lawrence Reilly

- Determining the cost allocation process for these infrastructure improvements will be vital to the process and we look to FERC to assist in the economics of new construction.

John Bilda

- Make sure that the consumer remains part of the solution.

Peng Zhang

- Continued cooperation between the public sector and universities that are researching many of the issues being discussed will be important going forward.

Rick Terven

- Federal, state and local governments must work together to find solutions that will work at the local, state and federal level.

Panel 5: Regional Approaches to Solutions

*NOTE: All speaker presentations are posted on the QER webpage at: **www.energy.gov/qer***

Presenter Name: Katie Dykes
Affiliation: Deputy Commissioner for Energy, DOE and Environmental Protection, State of Connecticut

Main Points:

1. It is clear that New England's economic future will be impacted by the lack of energy infrastructure. The current situation is not acceptable.
    - The region has experienced rising prices, volatility in prices from suppliers, retirement of non-gas resources challenging the reliability of the grid, and environmental consequences that the lack of gas capacity brings.
2. The market has not produced any solutions to this challenge.
3. It is impossible for one state to solve this problem alone. We are undertaking a regional energy initiative where investments are shared among New England states, increasing diversity of supply and investing in in pipeline capacity.
    - Since January we have been refining the proposal and moving it forward. The states are taking efforts to ensure they are getting input on this project from various sectors.

Presenter Name: Steven Clarke
Affiliation: Assistant Secretary, Executive Office of Energy and Environmental Affairs, Commonwealth of Massachusetts

Main Points:

1. Cleaner power is important from Massachusetts' perspective. Clean energy is a top priority of the Governor's greenhouse gas law that aims to reduce greenhouse gas emissions 25% from1990 levels by 2020, and least 80% from 1990 levels by 2050.
2. We need to tap the region's clean energy potential, and un-bottleneck supply to the region with clean energy.
3. Massachusetts has a bill in legislative review that allows utilities to obtain long-term contracts of energy. This will help to ensure that Massachusetts complies with greenhouse gas reduction obligations. It enables increased fuel diversity, reliability, and price suppression.

Presenter Name: Nicholas Ucci
Affiliation: Chief of Staff, Office of Energy Resources, State of Rhode Island

Main Points:

1. Rhode Island is struggling economically. The State faces high unemployment. In January 2014 we saw a 12% increase in customers' utility bills where over 20% of this increase was from power.
    - The current situation in New England is not a recipe for sustained viable economic growth.
2. Rhode Island's commercial and small businesses have not experienced the true impact of price volatility. We are just starting for feel it now.
3. We need to fix the problem together, or not fix it at all.

- What is at risk? A load interruption lasting for 1 hour is equal to $1 billion of loss in New England.
- If we do not fix it now, support for undertaking this effort will go away.

Presenter Name: Asa Hopkins
Affiliation: Director of Energy and Policy Planning, Vermont Department of Public Service

Main Points:

1. Vermont remains vertically integrated which has allowed the State to have a long-term perspective and investments.
    - Stability comes with this long-term outlook.
2. Diversity of supply gives the State options when a fuel supply becomes expensive.
    - Investments for diversity are needed.
3. Vermont aims to reduce greenhouse gas emissions by 90% across all sectors by 2020.
    - We need to ask what has to be built. Other than infrastructure, what tools do we need? What market structure do we need to meet our goals?

Presenter Name: Patrick Woodcock
Affiliation: Director, Maine Governor's Energy Office

Main Points:

1. New England highlights what is changing and dynamic in our region. It is also a micro-cosm of the US.
2. New England is well positioned and has made progress toward clean energy in the electrical sector.
    - New England has support for clean energy efforts through its regional renewable portfolio standard (RPS).
3. Last winter was alarming because it highlighted how close to affordable and clean energy New England is, and yet how the region could be exposed to burning oil, wasting money and hurting business.
    - We need the infrastructure to take advantage of these New England clean energy resources.

Panel Question and Answers

1. *Your regional initiatives focus on infrastructure. What do you say to people who want other solutions (i.e. - LNG, distributed generation, energy efficiency, and demand response?*

Steven Clarke

- The New England states have focused on other aspects, such as energy efficiency.

- However, the infrastructure projects are hard to plan singly. Therefore, the focus among the region's Governors is on large scale infrastructure. No state can tackle this on its own.
- We are also focused on reducing prices and enhancing diversity.

Nicholas Ucci

- Rhode Island is focused on these other solutions. Rhode Island is taking an "all of the above" approach the clean energy. We have to take this approach.

Asa Hopkins

- The problem is that energy efficiency programs cannot be implemented fast enough to get the amount of reduction needed to reduce natural gas pipeline constraints.

Katie Dykes

- We looked at NESCO studies from last year that evaluated costs of investments in LNG, and demand response. The study outlined that there are benefits from these solutions.
- LNG is a short-term solution. Natural gas pipelines are a long-term solution and the best solution economically.
- We need to examine how to ensure that the investment is made in the long-term because this is most cost effective, and you only get one shot at this.

Patrick Woodcock

- New England has decided to be heavily reliant upon natural gas. Should we try to manage or solve this situation? Managing this past winter has been costly.
- Looking at the long-term, plant retirements mean we have to manage natural gas load.

2. *Why are the region's states supporting infrastructure investments through FERC tariffs instead of state legislature initiatives?*

Patrick Woodcock

- The New England states have passed legislation to purchase pipeline capacity. We are currently studying if any situation might arise that is cost effective to use this authority.

Katie Dykes

- Benefits flow across the region and we are looking for solutions that takes this factor into account.
- There are many attractions to undertaking state legislation. However, getting approval uniformly in six states within the necessary time horizon is very challenging. So we are pursuing a FERC tariff instead.

Asa Hopkins

- We are all part of the same grid and so the issues matter as a region. When we share cost allocation, we do it in a uniform matter.

Nicholas Ucci

- Our interstate problem deserves an interstate solution; one that crosses borders.
- We should take a cue from FERC with its Order 1000 and look at tariff mechanisms driven by public policy.
- There is a timing constraint. We cannot go through more winters without a longer term solution.

Steven Clarke

- There is a combination of state and regional-level actions around tariffs.
- This is a matter of scale. The resources available are large, but most resources are transmission constrained. As such, no single state can make the investment to supply resources by investing on its own.

3. *Closing Thoughts from the Panelists?*

Steven Clarke

- The future of our system depends on a united state government approach; such an undertaking has never been done before.
- We need to position New England to be a leader. The future of the region is in play. New England must take the lead on job growth and economic competitiveness.

Nicholas Ucci

- This is an issue that other regions in the nation are facing as well. We must continue to engage in dialogue.

Asa Hopkins

- We should continue to look not only at building infrastructure.
- We also need to examine tools, financing mechanisms, and planning for renewable energy. Energy storage technology must accompany renewable energy.

Katie Dykes

- We should examine if our model is appropriate regional cooperation, and ask ourselves how it can inform a national energy policy.
- There are challenges to working with state regulators and achieving a common goal. A question to be answered is how to take a public policy other than your own state's policy into consideration and value it. Lessons learned can be shared with other states.

Patrick Woodcock

- We have a diverse region; each state faces its own challenge.
- We must align policies to integrate electric and natural gas markets.
- It is an economic imperative to move forward on investing in regional infrastructure.

Public Comments

The public is encouraged to sign up to provide comments, and each commenter is allowed three minutes in which to make them. Each commenter was asked to approach one of the standing microphones as their name was called, introduce themselves, their organizations and make their comments. On the stage representing the DOE were Dr. Karen Wayland, Director of State, Local and Tribal Cooperation for the DOE Office of Energy Policy and Systems Analysis, Larry Mansueti, Senior Advisor in the DOE Office of Electricity Delivery and Energy Reliability and Matt McGovern, Special Advisor in the DOE Office of Energy Policy and Systems Analysis.

The U.S. Department of Energy encourages everyone to file written comments at QERcomments@hq.doe.gov to ensure a wide variety of public input into the QER process. All comments are reviewed and considered.

Public Commenter Name: Leigh Youngblood
State: MA
Commenter's Main Points:

1. In lieu of placing a pipeline through Mt. Grace, 4,000 solar panels placed on 100 residential homes can generate 40MW of power without destroying conserved land.

Public Commenter Name: Stephan Kirosaki
State: MA
Commenter's Main Points:

1. This is incorrectly being referred to as a supply side issue, when in fact it is both a demand and supply side issue. Conservation, energy efficiency and introduction of renewable resources are the most critical practices in order to keep the planet safe for our children.

I would like to see:

1. Incentivize peak load shaving
2. Mandatory building net-zero energy or zero plus
3. More effective time-of-use electric rate systems
4. Enact a severe carbon tax
5. Measure C02 equivalent emissions for complete cycle (extraction through burning)

6. Reduce incentives for nuclear builds

Public Commenter Name: Janice Kirosaki
State: MA
Commenter's Main Points:

1. As Chair of Warwick Buildings group, we are grappling with reducing energy consumption in order to save money in small Rhode Island towns.
2. Would like to see increased implementation of tiered rate systems like that used by the Washington State Cooperative in Vermont. Through their tiered rate program, the Cooperative saw a 17% reduction in energy consumption.

Public Commenter Name: William Darnmost
State: CT
Commenter's Main Points:

1. I would encourage the DOE to prioritize the question "how do we address New England's future energy needs at the lowest cost while considering environmental goals?"
2. I would highlight and provide continued emphasis on demand side solutions. Distributed generation/combined heat and power are left out of many of the major studies. They can be more effective and can be implemented quicker than increases to pipelines.
3. We should invest in long lived infrastructure investments that will not continue to be used in the long run and can prove to be economic disasters.
4. We have a historic opportunity to get this right and a rush to judgment is not wise.

Public Commenter Name: Rich Cowan
State: MA
Commenter's Main Points:

1. Natural gas is not as beneficial to the environment as some studies would suggest. Studies show the impact of fracking has similar global warming potential as using oil as a fuel source.
2. Be careful not to react to a cold year in investing in increased pipeline coverage.

Public Commenter Name: Francis Pullaro
State: CT
Commenter's Main Points:

1. Congressman Larson mentioned that natural gas is the bridge to the future. As the federal government considers policies, please remember that developing renewable resources is equally important as pipeline growth. Over growth of pipelines can influence state energy policy in the wrong direction.

Public Commenter Name: Steve Kaminski
State: NH
Commenter's Main Points:

1. I support work that DOE is doing here – wanted to let DOE know that the people of New Hampshire are interested in this process.

Public Commenter Name: Chris Herdt
State: CT
Commenter's Main Points:

1. We would like further research to be done on the use of biofuels. We believe that power generation demand must be met by a diverse mix of fuels.
2. We believe that the Administration should be vocal in support of low sulfur emitting and affordable heating oil.
3. Corporations should be held accountable to replace broken or outdated pipelines before installing new pipelines.

Public Commenter Name: Eric Brown
State: CT
Commenter's Main Points

1. I am encouraged by the panel of state government officials working together to find common solutions to these regional issues.
2. I would like to see continued promotion of renewable power and expansion of local distributed generation.
3. I believe that the current urgent priority is to get transmission put in place to access the natural gas and emission free hydro generation that is available.

Public Commenter Name: Peter Aziz
State:
Commenter's Main Points

1. I would like further research to be done on the use of biofuels. I believe that power generation demand must be met by a diverse mix of fuels.
2. Infrastructure diversity ensures that homeowners will have fuel to heat their homes during severe weather events.

Meeting Conclusion

DOE's Dr. Karen Wayland expressed appreciation to everyone who took the time to present their views and participate in the process. She announced that details are still pending for the next round of QER public meetings which will take place in Bismarck, North Dakota; Portland, Oregon; New Orleans, Louisiana and Chicago, Illinois.

Dr. Wayland mentioned that the panelists' written statements from the meeting will be posted on the web within the next few days. She recognized the hard work of her staff, thanked the panelists and attendees, and the adjourned the meeting.

To provide written comments to the QER process please submit comments to: QERComments@hq.doe.gov

To obtain materials from the meetings in Hartford, Connecticut and Providence, Rhode Island, please go to: www.energy.gov/qer.