

**Summary of Presentations and Comments  
At the  
April 11, 2014  
Quadrennial Energy Review Meeting**

***Enhancing Energy Infrastructure Resiliency and  
Addressing Vulnerabilities***

**Opening Remarks**

**The Honorable Ernest Moniz, Secretary of Energy**

**Main Points:**

1. President Obama charged the U.S. Department of Energy (DOE) to build analytical capacity to support the development of the Quadrennial Energy Review (QER). The QER must be a multi-agency effort in order to succeed.
2. Today we are facing an altered energy landscape shaped by environmental challenges. This new landscape creates opportunities for the economy and energy sector to address these challenges.
3. The QER will take an integrated look at these challenges to guide investments in energy infrastructure.

**The Honorable John P. Holdren, Assistant to the President for Science and Technology**

**Main points:**

1. The purpose of the QER public meeting is to obtain feedback from experts and the public outside of the executive branch on challenges around energy infrastructure.
2. The first set of meetings will address energy technology systems being reviewed to accelerate large-scale innovation.
3. These results of the public meetings will lead to a report that calls for the Administration to establish a more robust multi-year roadmap that includes an integrated view of the short, medium and long term energy needs across all federal agencies.

**The Honorable Henry Waxman, Member, U.S. House of Representatives (D-CA)**

**Main points:**

1. The QER is an opportunity to examine the energy transition currently underway in the country and plan for tomorrow.

2. The changes in the energy sector are positive, but there is a need to accelerate change towards the clean energy economy and anticipate needs now.
3. The Intergovernmental Panel on Climate Change (IPCC) released a report last month confirms that climate change is already taking place globally. The QER is a blueprint for carbon dioxide reduction that will transform goals into specific actions.

## **Panel I: Resiliency and Vulnerabilities in Energy Transmission, Storage and Distribution**

**NOTE: All speaker presentations are posted on the QER webpage at:  
[www.energy.gov/qer](http://www.energy.gov/qer)**

**Presenter Name: Peggy Montana**

**Affiliation: Executive Vice President for Supply and Distribution, Shell, on behalf of the American Petroleum Institute (API)**

Main points:

1. Resilience of the oil and gas domestic infrastructure is critical as any disruption in oil and gas is not good for the nation and reverberates throughout the oil and gas industry with cascading effects on other industries.
2. The oil and gas industry recognizes that safety is important and strives to be efficient without incident.
3. API goals for the QER include:
  - Draw on ongoing National Petroleum Council's (NPC) work, building on the API security report.
  - Focus on natural disasters that impact the oil and gas industry.
  - Consider the NPC advice on strategic actions to enhance communication between government and industry.
  - Lessons learned from the 2010 DOE report were proven effective, and improved industry's ability to respond and restore operations quickly, so we hope the QER can identify policies at the state government level to harness the power of free markets in order to increase energy security.

**Presenter Name: Duane Highley**

**Affiliation: President and CEO, Arkansas Electric Cooperative, Inc. (AEC) on behalf of the National Rural Electric Cooperative Association (NRECA)**

Main Points:

1. AEC serves some of the poorest families in the United States and has a higher investment per consumer because of the population density which is sometimes only 7 people per mile. However, we exist to enrich the lives of our customers, and we focus on efficiency and cost rather than profit.

2. We often meet with DOE and other federal agencies, and in our opinion, it would help to provide security clearances for utility CEOs which would allow them to be briefed about potential cyber threats.
3. The only way to ensure reliability is to not compromise to ensure that the process is done correctly.
  - Redundancy is our first line of defense against all threats.
  - Our transmission towers were pulled down, lines of communications were cut, but this did not disturb service because of our redundancy. Steel in the ground is what provides grid reliability.

**Presenter Name: Joe Rigby**

**Affiliation: Chairman of the Board, President and CEO, Pepco Holdings, Inc. on behalf of the Edison Electric Institute (EEI)**

Main Points:

1. The electric grid has incorporated new technologies, and grid investments are imperative for the resiliency of the grid.
2. Weather conditions are still the greatest threat to reliability.
  - To address these issues, some vulnerable infrastructure can be moved, i.e. raise up transformers and/or move them to higher ground.
  - Microgrids may also allow independent operation during emergencies, although moving to a decentralized grid may have unintended costs.
3. How will standards be enforced? How do we deal with cost?
  - Government and industry need to leverage their cooperation to address these issues.
  - Utilities have benefited by applying federally-developed cybersecurity technologies and standards to their equipment.
  - These approaches need to be tailored since each utility has different challenges when addressing physical threats.
  - As threats become more sophisticated, we need to create additional public/private partnerships while expanding existing partnerships to further provide coordination between government and industry.

**Presenter Name: Andy Black**

**Affiliation: President and CEO, Association of Oil Pipe Lines (AOPL)**

Main Points:

1. Americans rely on pipelines – nearly every gallon of gas that Americans use each day travels through a pipeline.
  - More than 10,000 miles of pipelines have been added in the last four years.
  - Pipelines are the safest mode of transport for liquid fuels. Alternatives would result in much more environmental contamination.
2. Pipeline operators review their systems, inspect them, and perform maintenance.

- SCADA is used to operate and monitor the pipelines to ensure the safety and security of transport.
  - Pipeline system operators are constantly improving and maximizing safety performance.
3. Pump stations are powered by electricity, and after recent storms, the electricity outages that occurred resulted in oil shortages, not issues with the pipelines.

**Presenter Name: Gerry Cauley**

**Affiliation: President and CEO, North American Electric Reliability Corporation (NERC)**

Main Points:

1. Some equate the need for resilience with an aging infrastructure, but in fact, we actually have the most modern and reliable grid in the world.  
NERC conducts an annual risk assessment to help answer that question.
2. Of the 9 severe events that occurred in the 5 year period of performance, 6 of them were weather related.
  - The main impact was in the distribution system, and the main causes were flooding and foliage.
  - Two of the events were operational failures, which fall into NERC's wheelhouse of situational awareness.
  - Then we have risks we haven't seen which include cyber-attacks, physical attacks, and a solar flare.
    - i. With FERC's guidance we have investigated solar magnetic disturbances, and we have developed the first version of a standard.
    - ii. Physical and cyber risks are well managed though the industry.
    - iii. The Metcalf substation attack illustrated the physical vulnerability of some critical infrastructure. Lessons learned from that incident have increased work on incident response, information sharing, and collaboration with federal agencies.
3. Two additional risks have been published via a joint report with the California ISO.
  - If we reach 20-30 percent of renewables, we diminish the amount of base load to control VOLT/Var, and it will be necessary to add additional infrastructure to ensure that emergency services can provide reliability.
  - The final risk involves the increasing dependence of electric power on gas and the lack of long term commitments and contracts.

## **Panel Questions and Answers**

1. *What R&D should be undertaken for risk mitigation and recovery?*

**Gerry Cauley**

- One recommendation is tied to variable resources in that we need to encourage and set the right incentives to deploy technical capabilities.

- The value of storage is invaluable from a reliability and operational perspective.
- There is a challenge in terms of spare equipment, specifically large scale transformers.
- We need to get over the hurdle of how to invest in spare transformers and realize that synchrophasor equipment is a foundational enabling technology.
- Two-thirds of the largest events were caused by storms, so to make the distribution system more reliable, we need to concentrate on controlling vegetation around the equipment and lines.
- I encourage a study of the value of a diverse mix of generation for baseload energy.
- Finally, one of the lessons learned from Super storm Sandy is to have a backup supply of fuel.

#### **Andy Black**

- We all mentioned hurricanes, which can cause significant disruptions for pipelines when the power goes out.
- Restoration of power service to pump stations and terminals needs to be prioritized.
- Pipelines are not all currently where they need to be because of a shift in production, so we need FERC policies and Congressional policies that work together to ensure we have the robust pipeline system that we need.
- The relationship between industry and the federal government has improved and we should continue to build on that relationship. The Electric Sub-Sector Coordinating Council (ESCC) will serve industry well. There is also a Natural Gas Sub-Sector Coordinating Council.
- I feel strongly that we need legislation on information sharing between industry and the federal government about cyber threats. We also need to continue to drill. The grid exercise sponsored by DOE showed that there are real opportunities to work together, and we need to determine the roles and processes.

#### **Duane Highley**

- The ESCC is critical to industry.
- Our utilities are coal-dependent, so we should not move too quickly to eliminate coal from the energy mix. Our only other backup is natural gas, and when we needed it during this winter it was available at 1,000 times the price.
- Investments should be diversified in baseload power for greater reliability and greater security.

#### **Peggy Montana**

- Cyber security and cyber-attacks should be focused on.
- Human capital in power distribution should also be addressed. We are a bit of a gray industry in terms of workforce, so we must continue to address intellectual needs from a STEM education standpoint. (STEM stands for fields of study in the categories of science, technology, engineering, and mathematics.)
- We also need to address the big gap in skilled trades and their development.

*2. Beyond the ESCC, are there other public/private partnerships or collaboration efforts that should be undertaken?*

**Joe Rigby**

- We are stand-alone commercial operations, and at the end of the day there is a price tag that comes with all of this investment. Someone is going to have to pay for it. I think that to the extent that at the federal and state level, there should be some level of certainty that we can make this investment.
- We have opportunities to move into utilities 2.0, but we have to balance economic impacts with the end use customer.
- After the Washington, DC Derecho, I got a phone call from the Mayor of Washington, DC saying we have to deal with the infrastructure impact of the storm, and 15 months later Pepco announced a \$1billion undergrounding project. We were able to split the investment with the city to improve reliability and to minimize the extraordinary impact to customers. That is the kind of dialog that we need to have in order to get to the future we all want.

**Andy Black**

- We need to work together on propane supply. After Super storm Sandy and concerns this winter about propane supply, we need to think about how our supply chains work, and make improvements to those systems.
- We also need to communicate that information to the public, and illustrate that there are many entities working together.

**Duane Highley**

- Following the Metcalf Substation and Little Rock attacks, we agreed that there is not a need for additional legislation in regard to physical infrastructure. We have NERC and FERC agreements that are working fine right now.

**Gerry Cauley**

- The partnership between law enforcement and industry is important. Companies need to be engaged with local law enforcement so that there is a common understanding about critical infrastructure protection.
- I would suggest cross-sector utility and government partnerships need to be expanded.

**Peggy Montana**

- There is an oil and gas safety council, so we don't need anything additional; we just need to make the legislation and partnerships we have currently work better.
- There is an opportunity to improve interactions between government and our industry.

**Joe Rigby**

- 30-40 percent of my workforce could retire in the next few years, so we need to look at this as a way to put people to work.
- Our undergrounding project is going to spur 4000 jobs.
- We now have a unique opportunity to spur employment and careers that will have a positive impact on economy.

*3. Are there financial or market incentives that you would recommend for investment in resiliency and security?*

**Joe Rigby**

- At the bulk power level we have a good construct of rates that allow us to match the rate of recovery. We are in a time where the incline of organic sales growth is flat or negative while the incline of investments is steep.
- We should move to more mechanisms that will allow us to raise the capital that we need.

**Duane Highley**

- We work for the members and they own us, and they are our primary regulator. There is nobody else to pay, so it is either ratepayers or taxpayers and every month our board makes that call. They don't need any other incentive.
- Keeping these decisions at a local level makes sense.

**Andy Black**

- Liquid pipeline operators are incented today to invest in safety, and the incentives are working.

**Gerry Cauley**

- This is another opportunity for the public/private partnership so that we can understand the risks we are dealing with.
- There is a lot of tension around cyber and physical security, so we need to understand what the options are and how best to address the issues.

*4. Is there anything that the federal government can do to fill the vulnerability gap?*

**Gerry Cauley**

- I think that the current trajectory toward a climate based electricity grid future needs to be done in a way that recognizes physics and reliability. The social policy has to also work with reliability.
- Storage is going to be invaluable especially with the variable generation that is currently being installed.

- We also have to think of the value of spare equipment, especially transformers, and make sure we have backups available. We also should have the industrial capacity to supply them domestically.

**Duane Highley**

- The government could provide incentives to encourage domestic production of transformer equipment.

**Joe Rigby**

- The federal government should balance issues of grid with the “all of the above” concept. How do you fit renewables into the macro-grid?

**Andy Black**

- It is hard to build a pipeline, so once we get the agreements, we need the government to work with us to get the permitting.
- We need to do drills with government emergency response assets to learn how government and operators can work together.

**Peggy Montana**

- We are making a rapid transition in a very asset intensive industry, so the federal government can help by providing permits for new activities.
- We need the continuity and certainty of regulatory frameworks.

**Duane Highley**

- We need a national energy policy to give us certainty for our investments and allow us to do long term planning.
- The risk is too high to make long term plans.
- The industry is currently building peaking combustion because it is the cheapest and fastest solution, and because we don’t know what is coming down the line.

**Panel II: Key Perspectives on Energy Infrastructure and Vulnerabilities**

**NOTE: All speaker presentations are posted on the QER webpage at: [www.energy.gov/ger](http://www.energy.gov/ger)**

**Presenter Name: Marty Durbin**

**Affiliation: President and CEO, America’s Natural Gas Alliance (ANGA)**

**Main Points:**

1. In the currently changing landscape of energy, there is a changing landscape of opportunities.

2. Along with opportunities come vulnerabilities. We need to make sure to take advantage of these opportunities and create abundant, affordable, and clean energy.
3. The growing economic demand in the US is driving energy infrastructure development; there is no concern that as demand rises, the energy industry won't be able to meet it.

**Presenter Name: Dr. Robert Hartwig**

**Affiliation: President, Insurance Information Institute**

Main Points:

1. The economy is changing rapidly in unanticipated ways.
2. Results can be volatile. Insurers work closely with client risk managers to keep risks to a minimum, costs down, and adverse outcomes to a minimum.
3. Climate change (storms/natural disasters) is dramatically increasing physical and financial losses.

**Presenter Name: Robert Misback**

**Affiliation: Vice President, Power Systems Group, Mitsubishi Electric Power Products, Inc.**

Main Points:

1. Power electronic and modeling investments made now are helping to strengthen physical security and integrate renewable energy into grid.
2. Mitsubishi is collaborating with utilities to harden their products and utility substations against attacks and natural risks.
3. New technologies such as mobile gas insulated substations, spare recovery transformers, and smart transformers will help to improve the survivability and resiliency of the equipment.

**Presenter Name: Robert Blue**

**Affiliation: President, Dominion Virginia Power**

Main Points:

1. The best protection from cyber threats is collaboration with the government and energy peers. The ability to respond has increased by enhanced training, malware updates and monitoring of threats.
2. Dominion has avoided problems due to diversity in its fleet. Federal policy must support private efforts to increase pipeline capacity.
3. The government should help develop policies that are guaranteed to be fair and clear to encourage investments.

## Panel Question and Answers

1. *What are the recommendations to fill vulnerability gaps that the QER should provide?*

### **Marty Durbin**

- There is room for better coordination among agencies and streamlining of the permitting process to keep up with infrastructure needs.
- The government has an opportunity to help in educating the public and policy makers on energy issues, including explaining critical needs.

### **Robert Hartwig**

- The Insurance Act extension expires at the end of 2014. It is a public/private partnership to help restore stability to insurance markets after the 9/11 acts of terrorism. This Act has allowed the market to stabilize, at no cost to tax payers.
- Since this Act is up for renewal, the coverage should be continued as is until the end of the year, and next year have an exclusion pop-up. Another alternative is to go to the market and get narrow/limited coverage. This is a rare example of a public/private partnership that has worked for 11.5 years.
- Tort reform litigation is needed at the federal or state level. This litigation drives up the cost of insurance coverage needlessly. When we are talking about new kinds of energy infrastructure, there are ways to manage risk with insurance solutions.

### **Robert Misback**

- We have to make sure that legislation and standards do not inadvertently prevent new technology.
- The standards for solar and wind connections to the grid are outdated which prevent full capability of the systems to increase stability on the grid.
- We need incentives to produce the best and fastest customer behavior results.

### **Robert Blue**

- We should take a step back to ensure that any policy being pursued recognizes the value of the grid.
- We are now asking the grid to do a lot more; including environmental regulations, transforming generation fleets (shutdown coal plants, moving to natural gas), putting more renewable energy on the grid, hardening the grid, and we are seeing more severe weather.
- On the distribution side we need to make sure that we can incorporate new technologies (i.e. micro-grids, energy storage).
- We need regulatory certainty to be there for financial incentives; everyone who benefits from the grid should pay for part of it.

2. *The QER will look to examine new technology and its value to determine where Federal research should be focused. Where do you think R&D should be undertaken?*

**Robert Misback**

- Renewable energy R&D is being focused on power electronics which is a key enabler for any connection of intermittent source, such as wind and solar power, as well as energy storage.
- In terms of grid security we will be looking at how to protect new equipment through hardening it.
- Additionally, by making equipment smaller and more transportable it will become more cost effective to have spare components that can be used in many places on the system. This is a new concept, usually equipment is built large and is not meant to be moved.
- Monitoring and diagnostic technology can shut off equipment before catastrophic fails. This is important in minimizing the effect of catastrophic events and keeping small events from triggering others.

**Marty Durbin**

- Private R&D is needed in developing resilience in distributed generation, to allow islanding in emergency scenarios.
- Islanding requires coordination between grid operators and generators. This coordination is an opportunity to increase efficiency and resiliency.

**Robert Hartwig**

- There is a need for natural disaster and catastrophe legislation. Such legislation should examine cities and their power grid and how they plan to protect transportation systems (i.e. metro/subway). This is an example of policy makers looking holistically at a natural disaster across all sectors that might be affected, not just the energy sector.
- Cybersecurity concerns can contribute to cascading events. The concern is focused around supply chain disruption.
- Corporate America is worried about living in today's world of "just-in-time" interconnectedness, and right now we do not understand it well enough to know its impacts on disruption.

**Robert Blue**

- There is concern about the disruption of the communications network. Having the ability to talk during catastrophic scenarios is very important.

3. *How can the QER address inherent conflicts among state, local, and federal government with respect to security vulnerabilities?*

**Marty Durbin**

- The QER will help identify where challenges and opportunities are for better communication.
- The QER process has to be clear about communication, identifying, and solving problems.
- The process should also involve collaboration across different levels of government (i.e., state PUCs, RTOs).

**Robert Hartwig**

- A Department of Homeland Security initiative is underway to examine the vulnerability of the grid and how it impacts other dimensions of the economy. We need to look at the grid as being part of the nation's physical and economic security.

**Robert Blue**

- The last couple of years have seen more communication between industry and the government sharing more information.
- There is a lack of perceived coordination within the federal government on different policies.
- There is a need for unified thinking- What are the goals? How fast will progress take place? What are the priorities in implementing changes?

4. *We have heard about the importance of hardening the grid and incorporating new technology into the grid. What are your thoughts on how these new technologies will impact the need to harden the grid?*

**Robert Hartwig**

- There is a real concern of cascading effects. Everything is interconnected today, and even now we underestimate how much it is. This impact will only increase in importance as we become more digitized.

**Robert Blue**

- Even with new technologies, we will still rely on the central grid for a long while to come.
- We need to be sure to continue investments in the grid and not forget about reliability when looking at new technology coming onto the grid.
- New technology emphasizes the need for more investment into the grid.

**Robert Misback**

- Today huge amounts of electricity are being moved across the country, for example, wind is far away from population centers. Therefore, the grid will only be increasing in its importance to the country, not decreasing.

## 5. Closing Thoughts from the Panelists

### **Marty Durbin**

- We should be integrating coal with natural gas, not moving towards eliminating it.
- Fuel diversity is an overstated concern. The changes to date have been disruptive and been due largely to infrastructure constraints. We do not have a supply problem; diversity is up more than ever.

### **Robert Hartwick**

- Make reauthorizing the Insurance Act a priority.

### **Robert Misback**

- The US has more low cost fuel than any other country in the world, as well as the largest grid and lowest cost of electricity in the world.
- The QER is a good opportunity to make sure we maintain this advantage.
- A lot of grid equipment was built in the 1960's, so its refurbishment would have to take place regardless. Now, we should focus not on refurbishing, but replacing with new technologies.

### **Robert Blue**

- It's not a supply problem, it's an infrastructure issue. We need more pipeline capacity.
- Remember the value of public/private partnerships. Encourage policy makers to continue this push.

## **Public Comments**

A few people signed up to provide comments, and each was 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 U.S. Department of Energy were Dr. Karen Wayland, Deputy Director for State, Local and Tribal Collaboration, John Richards, Senior Advisor and Matt McGovern, Senior Advisor, Office of Energy Policy and Systems Analysis.

The U.S. Department of Energy encourages everyone to file written comments at [QERcomments@hq.doe.gov](mailto:QERcomments@hq.doe.gov) to ensure a wide variety of public input into the QER process.

**Public Commenter Name:** Barbara Tyran, Director of Washington & State Relations

**Organization:** Electric Power Research Institute (EPRI)

“EPRI recently completed a Concept Paper, ‘The Integrated Grid’, which examines the rapid rise of Distributed Energy Resources and how these technologies could be integrated into the electric power systems so customers could enjoy the benefit of both the central power system and the distributed technologies in the most cost-effective manner.

The integrated grid enables the optimal combination of local generation, energy storage, energy efficiency and new uses of electricity – integrated with central generation – to provide reliable, affordable and environmentally sustainable electricity. The approach allows resource deployment that will realize all potential benefits and requires a modern grid characterized by connectivity, enabling interconnection rules, and rate structures that enhance the value of the power system to all consumers.

Although the journey towards a fully integrated grid will take decades, EPRI is pleased to submit the first of three phases, ‘The Integrated Grid’ Concept Paper, into the permanent QER comments library and to discuss it at any time.

EPRI plans to finalize Phase II in summer 2014. The next phase will establish a comprehensive framework to address research gaps in key areas and assess the technology needs by examining: 1) a benefit-cost framework; 2) interconnection technical guidelines; and 3) grid planning and operations. This scientifically rigorous assessment before system-wide deployment will support prudent investment for grid modernization. Phase II will also be submitted to the QER library when complete.

Phase III will involve demonstrations of the methodology for a particular power system to assess the feasibility of an integrated benefit/cost methodology, as well as one or more technology demonstrations, and will continue over the next two years.

EPRI looks forward to providing future updates and to continuing our collaboration with DOE and other stakeholders to shape the future of electricity together.”

**Public Commenter Name:** Becky Harrison, CEO

**Organization:** Gridwise Alliance

“The GridWise Alliance has a unique cross-section of members, including electric utilities, IT and communications equipment and service providers, national laboratories, academic institutions, ISOs/ RTOs, and more.

The GridWise Alliance issued a report last year entitled, Improving Electric Grid Reliability and Resiliency, which highlighted many lessons learned from Superstorm Sandy and other very-large scale events, such as floods, wildfires and ice storms.

In our report we highlighted the increasing interdependencies of many of our critical infrastructures including our gas delivery infrastructure, our information and communications infrastructure, our fueling supply chain and our electric infrastructure. As

our digital economy becomes increasingly dependent on electricity, the impacts from power outages are increasing. We must understand and manage these interdependencies proactively in order to insure we can recover from very large-scale events quickly and effectively.

Grid-related technologies, including remote sensing and control capabilities, enable a utility to have greater “situational awareness” and are essential in preventing and responding to extreme weather events as well as cybersecurity and physical threats, but today are not widely deployed to maximize their capabilities.

Multi-customer microgrids that consists of different entities or properties, such as a gasoline station, ATM, and grocery store – can improve resilience during and following very large-scale events, but the rules regarding who will manage these and how they will interface with the larger grid must be defined before they can be widely deployed.

We also believe it is important to ensure that consumer engagement is incorporated into this process, as our nation’s electric delivery system undergoes a substantial transformation in the coming years. Our goal must be to maintain and even improve the current high level of reliability our nation enjoys while embracing the innovation that will take us to the next level - transitioning to a two-way interactive electrical system where customers are both consumers and producers of electricity. Currently, we lack the infrastructure and systems to manage a truly “transactive” energy world enabling these new “prosumers” of tomorrow.

It is critical that we understand that the electric power system is a complex ecosystem and “silo-ed” policy development or decisions may have unintended consequences on the ecosystem as a whole. The electric utility industry is undergoing a major transition, but the electric grid is not going away. The future grid of 2030 likely will look very different and be managed differently, but we will continue to need a “wired” network to serve as the backbone of our electric power system.

The GridWise Alliance stands ready to assist with this critical QER effort.

I would like to submit our Report and these remarks for the official record.”

**Public Commenter Name:** Mollie Simon

**Organization:** National Wildlife Federation

“I am here on the part of the National Wildlife Federation, one of the nation’s oldest and largest conservation organizations dedicated to inspiring Americans to protect wildlife and our children’s future. On behalf of our more than 4 million members and supporters nationwide, we applaud your efforts to craft a comprehensive federal road map to identify and implement consistent, clear energy goals and policies. I am here today to stress that these policies must enhance our ability to combat climate change; in fact, the National

Wildlife Federation believes this must be the single most important factor informing all of our major energy infrastructure and investment decisions.

We were thrilled to hear President Obama's commitment last June "to take bold action to reduce carbon pollution" and "lead the world in a coordinate assault on climate change." National Wildlife Federation has been working hard to support the numerous efforts this Administration has already taken to reduce our economy-wide carbon pollution, and we look forward to continuing this collaboration. These policies have helped protect our most cherished lands and the wildlife that depend on them from the impacts of unabated climate change. However, we must reiterate that an "all of the above" energy policy is simply incompatible with this Administration's stated goals of cutting carbon pollution and will continue to undermine our ability to address climate change. An "all of the above" energy policy that allows for the expansion of coal mining and export, oil development and export, and turns America's heartland into a throughway for Canadian tar sands export pipelines will directly undercut the laudable efforts of the Administration to reduce our domestic carbon pollution – like the pending rule to limit greenhouse gas emission from existing power plants. We must not undo the potential benefit of this substantial and historic effort by simply increasing emissions in other sectors.

The latest report from the Intergovernmental Panel on Climate Change, released just a few weeks ago, was alarmingly clear – climate change poses a growing threat to our health, economic livelihood, and food and water sources of billions of people – including Americans. With the drought in California already causing a state of emergency and the rest of the country bracing for a summer filled with increased wildfires, hurricanes, and extreme weather events, it is imperative that we do everything in our power to mitigate these impacts to protect communities and wildlife from further devastation. This goal simply cannot be achieved at the levels scientists warn are necessary if we continue an "all of the above" energy strategy that deepens our reliance on polluting fossil fuels.

In June of last year, President Obama declared that he would not find the Keystone XL tar sands pipeline in the national interest if it was found to "significantly exacerbate" climate change. We applaud this commitment and look forward to the rejection of that highly polluting and dangerous project. We also hope that this same "climate test" will be applied to all major energy infrastructure decisions under the administration's authority.

We are very pleased to see the draft QER include the long-term goal of advancing clean energy and recognize the threat of climate-driven severe weather events to our nation's energy infrastructure systems. However, the need to combat climate change and minimize these growing threats must be given center stage in our future energy policy platform. Specifically, the QER should prioritize as a goal promotion of projects and infrastructure investments that reduce carbon pollution and advance zero-carbon energy sources. These decisions must not lock us in to major infrastructure projects that will perpetuate production of polluting fossil fuels for the next century. As we said in our January 16th letter, along with

seventeen other national organizations, an “all of the above” energy strategy is a compromise that the future generations can’t afford.”

**Public Commenter Name:** Ron Edelstein, Director

**Organization:** Government and Regulatory Relations, for the Gas Technology Institute

“To enhance the US energy system resiliency and reduce vulnerability, GTI recommends increased R&D funding in the areas of combined heat and power (CHP) and distributed generation (DG), including engine driven systems, fuel cells, and renewables; Developing analytical techniques to understand and quantify gas system and gas/electric interoperability risks and consequences; Strong support for midstream R&D (the new Fossil Energy budget line), including methane emissions reductions sensors and techniques for gas transmission and distribution systems; Advanced technologies to extend natural gas transmission and distribution systems to areas either not served by natural gas or not adequately provided for capacity for new uses like power gen, DG, CHP, and natural gas vehicles, as well as traditional home and building use, and asset lifecycle tracking and GPS-based tools and techniques to track and locate new or replacement assets put into service.

Advanced technologies for the aging gas infrastructure to ensure integrity and resiliency of the natural gas system, including sensors and technologies for assessing pipeline and gas main risks/integrity and methane leakage detection, quantification, and reduction technology; Natural gas exploration and production (E&P) R&D to ensure that greening fracking and water recovery technologies are developed and available to ensure continued and growing supply of natural gas from shale in an environmentally acceptable way (especially with the elimination of the RPSEA program).

We will separately address energy efficiency and other needs at other QER sessions.”

**Public Commenter Name:** Christina Cody, Senior Program Officer

**Organization:** National Association of Regulatory Utility Commissioners (NARUC), representing the State Public Utility Commissioners.

“The QER’s early focus on resilience is timely because of the multitude of vulnerabilities our utility infrastructure face every day. These vulnerabilities can take the shape of a sophisticated Metcalf-style attack or a massive storm like Hurricane Sandy. For well over 100 years, our lights, for the most part, have stayed on, despite the numerous challenges and vulnerabilities our utility systems face each day. Clearly, though, the times and threats we face are changing.

So, how can the QER address the resilience of our system? The utilities own and operate the infrastructure themselves, and although we regulate them, they know their infrastructure

better than anyone. Therefore our regulated utilities are ultimately responsible for shoring up the safety and security of their systems. The QER can inform and support these utility efforts.

But as their regulators, and as the public officials entrusted with the responsibility of ensuring the safe, reliable, and affordable delivery of utility services, this is our problem too. This industry spends billions of ratepayer dollars per year to train, educate and drill its employees and maintain physical infrastructure so that the lights stay on or come back on quickly after an incident. It is here that the role of the States is paramount.

State regulators are responsible for setting the rates for and the regulations that govern the nation's investor owned distribution systems. We all would like to have the safest most reliable system possible, and that is everyone's goal. However, we all must remember that at the end of the day, it is the consumer who will be paying for every decision that is made.

So what can regulators do to ensure our mission? At NARUC, our staff is working around the clock on resilience and security issues. We have written two primers on understanding, measuring and paying for resilience. Through our Committee on Critical Infrastructure, we are doing a tremendous amount of outreach and education through workshops, seminars, trainings, and much more. On cybersecurity and resilience, NARUC has launched a multi-state tour, running training and educational seminars at our member offices throughout the country. In fact, by this summer, NARUC will have initiated cybersecurity technical assistance with 35 of our members. The only limitation in our ability to continue this training is resources. We are grateful for the support of the U.S. Department of Energy to allow us to come as far as we have. We are ready and look forward to continuing this important work.

We are getting up to speed on all these developments—and quickly—because utilities are coming to us with requests to harden their system. Whether these investments address physical or cyber security, they must use risk-based approaches to prudently meet the prevailing expectations of reliability and affordability for the ratepayer.

All of this depends on partnership, dialogue and discussion. As we've seen across the country, States are pursuing innovative approaches to ensuring grid resilience. While NARUC does not endorse any particular approach, the QER can learn a great deal from the States who are pushing ahead with new and innovative policies.”

## **Meeting Conclusion**

Dr. Karen Wayland expressed appreciation to everyone who took the time to present their views and participate in the process. She announced the next 2 part QER public meeting will be on April 21 in Providence, RI from 9:00am until 1:00 pm at the Rhode Island Convention Center; and in Hartford, Connecticut from 1:00pm until 5:00pm at the Phoenix Auditorium.

Details are still pending for the next round of meetings which will take place in North Dakota, Portland, New Orleans, and Chicago. She recognized the hard work of her staff, thanked the panelists and attendees, and the meeting was adjourned.

Please submit written comments to the QER process at: [QERComments@hq.doe.gov](mailto:QERComments@hq.doe.gov).