National Association of State Energy Officials

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Comments of the
National Association of State Energy Officials on the
Quadrennial Energy Review
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The National Association of State Energy Officials (NASEO) appreciates the opportunity to provide the following comments for consideration in the Quadrennial Energy Review (QER). NASEO and our 56 governor-designated state and territory energy office members have long been concerned about the nation's and states' energy infrastructure and the vital role it plays in meeting our energy, economic, and environmental goals. We have worked with states to help them develop comprehensive energy plans and energy assurance plans that assess risks and opportunities across the energy system – electric, natural gas, petroleum products, alternatives.

NASEO also works with state energy directors and governors' energy advisors to develop and address forward-looking energy infrastructure policies set by the governors and legislators. These state policies and programs are distinct from regulatory approaches that are often and necessarily more reactive and implementation oriented following the actions of policy makers. The policies and vision set by the governors and legislators with the support of the energy offices are essential to states' long-term economic development and ensuring resilient electricity, natural gas, liquid fuel, and alternative energy systems.

The U.S. Department of Energy (DOE), Office of Energy Policy and Systems Analysis has stated that the first year of the QER will focus on the following.

> "The first installment of the QER will focus on transmission, storage and distribution infrastructure (TS&D), the network that links energy supplies to intermediate and end users. The enormous investments in TS&D infrastructure influence supply and end use patterns, policies, investments and practices over the course of decades. Once built, the TS&D infrastructure is relatively inflexible and therefore becomes to some extent deterministic of supply and end uses. For all energy infrastructures, the QER analyses will consider the impacts of transformations in energy supply, markets, and patterns of end use; issues of aging and capacity; impacts of climate change; cyber and physical threats; and vulnerabilities related to growing interdependencies of energy systems with water, telecommunications, transportation, and emergency response systems."[1]

[1] For further information see: Quadrennial Energy Review: Scope, Goals, Vision, Approach, Outreach

As an overall point, we want to emphasize the importance of federal, state and local cooperation and coordination, including coordination with appropriate environmental agencies. NASEO comments fall within the above QER first-year focus, and are organized below under key issue areas, including:

- Vulnerabilities and the Future Energy System,
- Resilience,
- Reliability,
- Physical and Cybersecurity,
- Economic Development, and
- Affordability.

1. Vulnerabilities and Desirable Characteristics of the Future Energy System

An overarching concern of the states is addressing system vulnerabilities that could be addressed through long-term strategic planning that informs and leverages planned and future energy system modernization investments by the private and public sector. A future energy system that minimizes vulnerabilities and maximizes resilience can best mitigate the substantial human and financial costs of significant energy supply disruptions resulting from natural and man-made disasters.

Quantifying the economic and human consequences, vulnerabilities, and threats of energy supply disruptions aids in understanding energy sector risks and interdependencies. This quantification serves as a foundation for the public and private sector planning and investments needed to reduce system risks. When examining vulnerabilities of our energy system, we must consider natural disasters, aging or inadequate infrastructure, pandemics, changing energy flows, and even deliberate attacks on both the physical and cyber aspects of our infrastructure. These events can cause billions of dollars in damage and risk human life and safety. In many cases, it is far less costly to mitigate these recurring risks than it is to respond to, recover, and rebuild following a disaster.

NASEO understands that the QER is focused on all of the energy resources upon which the nation relies. We clearly recognize that these resources must all be carefully examined and their interdependencies understood. Too often a solution for one sector can simply translate into a problem for other sectors which is why this effort must examine these issues in a comprehensive manner. Having said that, there also seems to be a tendency to sometimes be overly focused on the electricity and natural gas sectors, which are often more easily addressed due to the more centralized nature of their investments and operations compared to the petroleum sector.

State energy offices carefully consider the nation's dependence on petroleum from a security and economic perspective as they develop and implement program and policy initiatives. Their efforts include nearly every aspect of energy, such as grid modernization, distributed resources, transportation fuels and efficiency, and demand side programs in the industrial and buildings sectors. The particular focus they bring to petroleum is well founded. According to the U.S. Energy Information Administration (EIA), the total U.S. energy expenditure in 2012 was $1.4 trillion with spending on petroleum products totaling $884 billion – or 65 percent of total U.S.

energy spending. The impact of petroleum, both in terms of the benefits of production and the concentration of risks, must be considered by state and private sector energy planners given the history of price volatility and the global nature of oil markets and pricing.

The tremendous shift in the sources of our domestic oil and gas supplies has created new challenges to adapting the transportation infrastructure needed to move these resources to markets. For example, substantial investments by the private sector to increase pipeline capacity and move Canadian crude oil to the Midwest has resulted in billions of dollars in new investment, increased pipeline safety, and provided new jobs at refineries. Conversely, the temporary shutdown of the Cochin pipeline last fall contributed to a shortage of propane in the upper Midwest. Some customers were unable to obtain any propane supplies; other customers received only partial tank-fills; high prices created a severe economic hardship for both businesses and consumers; and taxpayer funds were needed to aid low-income consumers in paying heating bills. Moreover, the repurposing of this pipeline means it will not be available to move propane this winter, placing a greater reliance on more expensive rail and truck shipments. Rail generally appears to be fully congested. The QER does not really address how these upgrades will occur and who will pay.

State energy Offices also work with the private sector to support the National Infrastructure Protection Plan and energy assurance planning activities led by DOE. The result of these efforts is a nation better able to respond to energy emergencies as they arise and increasingly robust policies lead to improved resilience in the longer term. All the states engage in some form of strategic energy planning – often led by the state energy office – to examine ways in which they can work with the private sector to achieve an optimal energy future with diversified supplies and increased integration of renewable energy and efficiency. These efforts clearly align themselves with the objectives of the QER, because states recognize that they are dependent on an energy supply chain which is regional, national, and international in nature.

The role of state energy offices is largely focused on policy and program driven initiatives, working at the direction of governors and legislatures and in partnership with other state agencies, the federal government, and the private sector. By building constructive public-private partnerships states are improving our nation's critical energy infrastructure. These efforts benefit greatly from the dialogue and modeling of initiatives such as the QER, and the important analytical, planning, and coordination efforts of DOE's Office of Electricity Delivery and Energy Reliability. We look forward to continuing the states' collaborative work with DOE and strongly support the Secretary's efforts to improve our energy system reliability and resilience, economic competitiveness, and the environment through infrastructure planning and modernization.

NASEO believes that as a next important step DOE should conduct a cost-benefit analysis by state or local (energy system defined) region of the impact of a natural disaster from an economic perspective with the aim of producing more granular data that might inform state/private infrastructure investment decisions. In addition, given the changing dynamics of energy supply and demand flows, DOE should model energy systems and how they interact over a 30+ year period, given changes in energy flows - electric, gas, oil, renewables, etc. This work would logically build off of the Energy Information Administration's Annual Energy Outlook, which is already focused on the factors that shape the U.S. energy system over the long term. We also

understand that EIA Form 861, Annual Electric Power Industry Report, has been temporarily suspended. This data set is critical, especially during a major transition.

2. Resilience

Resilience is defined in Presidential Policy Directive -21(PPD-21)[2], as "the ability to prepare for and adapt to changing conditions and withstand and recover rapidly from disruptions... [it] includes the ability to withstand and recover from deliberate attacks, accidents, or naturally occurring threats or incidents." Furthermore, a key concept in the 2013 NIPP is to: "Hav[ing] accurate information and analysis about risk is essential to achieving resilience. Resilient infrastructure assets, systems, and networks must also be robust, agile, and adaptable. Mitigation, response, and recovery activities contribute to strengthening critical infrastructure resilience."

So how is it that we can work to meet this objective within the context of the QER? States with the support of DOE have developed Energy Assurance Plans that address responding to energy supply disruptions and efforts that can be taken which support longer term investments in more resilient energy infrastructure. States have continued to be faced with events that have impacted energy supplies and understand the importance of maintaining the capabilities to effectively respond to energy emergencies and have worked with limited resources to maintain these plans and Staff trained to respond. States have also encouraged through legislative actions, policies, program and other initiatives, investments in energy infrastructure that is inherently more resilient. This has included work in supporting deployment of Smart Grid technologies, investments in Combined Heat and Power (CHP) and microgrids, investments in distributed generation including renewable resources such as wind, hydro, solar, geothermal and other technologies. States have worked with Clean City Coalitions to advance the use of alternative fueled vehicles and the use of biofuels and other alternative transportation fuels. These efforts are supported through the federally-funded State Energy Program (SEP). For every dollar of SEP used by states it has leveraged $10.71 in additional funding from states and the private sector (non-federal) funds[3]. This has resulted in significant progress in infrastructure investments that have contributed to enhanced resiliency and needs to be understood as an important tool for meeting theses important energy policy objectives. With emergency planning a mandatory feature of SEP plans, more funds should be provided.

NASEO recognized the important and substantial contributions that have been made by the Department of Energy in supporting and developing states and local energy assurance capabilities. Direct federal support for state energy assurance planning and preparedness concluded in 2013. While it is now largely up to states to support this capability that has been substantially improved over the last five years, the Department of Energy should continue its support of the state and local efforts through technical support and sponsoring training and exercises and assuring the needed coordination and communications with the private sector and

[2] http://www.whitehouse.gov/the-press-office/2013/02/12/presidential-policy-directive-critical-infrastructure-security-and-resil

[3] For further details and examples see: http://www.naseo.org/data/sites/1/documents/publications/NASEO_SEP_In_Brief.pdf

through regional collaborations. Continuous training and exercises are necessary as personnel change and as our energy systems become both more complicated and more interdependent.

3. Reliability

The reliability of energy systems, particularly in the electricity and natural gas sectors, has been a key regulatory responsibility of state public utility commissions for over 100 years. The level of reliability for power and natural gas must also be balanced against cost and affordability. At the same time, the growing interdependencies across sectors on energy means that reliability can take on greater importance as a result of the economic and human consequences that result from a lack of reliable energy resources. For example, EPRI studies have estimated the cost of power disturbances across all business sectors in the U.S. at between $104 billion and $164 billion a year as a result of outages and another $15 billion to $24 billion due to power quality phenomena. There are costs associated with maintaining reliability and they must be weighed against the costs that occur when there is a lack of reliability. While NERC has responsibility for the bulk power systems, most states have responsibilities for authorizing funds to assure the reliability of local distribution companies serving end-use electric customers. This is however, not only a question of utility investment in reliability. Some customers need to have highly reliable energy supply because of the criticality of their operations. Hospitals have back-up power capabilities because of the human consequences that that could occur in a power outage. There are cost-benefit trade-offs on the end-user side of the infrastructure investments that should be considered by DOE in this analysis. Microgrids and CHP are additional examples as are net zero energy buildings. NASEO supports the consideration of these issues by DOE in the QER as well as by states in their comprehensive energy plans and energy assurance efforts. State efforts to support investments in resiliency through programs, incentives and other actions should recognize these investments to the extent they contribute to reliability.

4. Physical and Cybersecurity

The Mission of the 2013 NIPP is to: "Strengthen the security and resilience of the Nation's critical infrastructure, by managing physical and cyber risks through the collaborative and integrated efforts of the critical infrastructure community. While threats to physical and cybersecurity have long been understood, the options for reducing these risks have evolved over the last decade. First, the recognition that the slate of options to address these issues is broader than once considered for physical and cybersecurity and now clearly includes resiliency and consideration of interdependencies. Second, the nature of the rapidly evolving cybersecurity threats means that both the public and private sectors need to be able to quickly adapt to the evolving nature of this threat. For fiscal year 2013, the Industrial Control Systems Cyber Emergency Response Team (ICS-CERT) responded to cybersecurity threats across all critical infrastructure sectors. The energy sector alone accounted for 56 percent of ICS-CERT total responses[4].

State homeland security agencies have been working to protect critical infrastructures in their states working with the U.S. Department of Homeland Security. Under the NIPP the DOE is the

[4] https://ics-cert.us-cert.gov/sites/default/files/documents/Year_In_Review_FY2013_Final.pdf

lead federal sector specific agency for the Energy Sector and works in coordination with U.S. Department of Homeland Security. At the state level, state homeland security/emergency management agencies have been working to protect critical infrastructures across all sectors. In many states the Emergency Support Function 12 (ESF-12) is provided by state energy offices. Typically, the state energy office and public utility commission, working with the state's homeland security/emergency management agency, are key functionaries. The state energy offices have also been engaged in a number of states in supporting efforts to protect critical energy infrastructure. In particular, public utility commissions have authority for providing regulatory cost recovery of investments in security and resiliency for both physical and cyber, while the energy offices have direct responsibility for preparedness and response. The roles and responsibilities of state energy offices are typically identified in state energy assurance plans which should be understood as an integral part of how states work to address the physical and cyber threats to energy infrastructure. At a national level, states are engaged with this work through the Energy Sector Government Coordinating Council (GCC) and work with the private sector in the Critical Infrastructure Partnership Advisory Council (CIPAC). Both NASEO and NARUC are members of the Energy GCC and the Electric and Oil and Gas CIPACs. In addition, the cross-sector State, Local, Tribal, and Territorial Government Coordinating Council is another focal point for addressing state infrastructure security and resiliency concerns.

NASEO believes that many state energy offices can and have played an important role in providing energy sector subject matter expertise in both physical and cybersecurity in responding to disruptions as well as mitigating sector risks. This role has been supported by DOE for many years. In fact, most state energy offices can trace their establishment to the Arab oil embargo in 1974, when they were created to administer emergency fuel allocation programs and to undertake efforts to reduce the risk of the nation's growing dependence on oil imports.

5. Economic Development

A number of state energy offices are today aligned with state economic development agencies. This reflects the understanding of the importance of energy and energy infrastructure investments that create jobs and support economic development by assuring a reliable and affordable energy supply. The reduction in natural gas prices due to the substantial increase in U.S. natural gas production has also contributed to a rise in domestic manufacturing and the return of the production of goods that were previously manufactured overseas.

The efficient use of energy has also improved the international competiveness of business and manufacturers, and a diversified energy resource base can reduce risks and enhance reliability. In addition, by reducing energy use through energy efficiency investments, the reduction in energy expenditures can increase profitability and reduce consumer spending for energy which can be used to purchase other goods and services, further stimulating the state economy. State business development programs can also help bring new technologies and move innovations to markets more quickly. A number of states have worked to support the integration of advanced manufacturing processes that have been supported by the U.S. Department of Energy's Advanced Manufacturing Office. These in-state investments can also create direct and secondary economic impacts and jobs and reduce the out-flow of dollars to pay for the imports of energy into the states. State energy loan funds operated by most state energy offices are another

important tool in helping to assure financing for needed energy infrastructure and efficiency investments.

6. Affordability

Energy costs are an important factor that affects the overall U.S. economy and directly impacts consumers and business. For 2014, the Energy Information Administration estimates that net imports of crude oil will cost the United States $668 million per day, and while this number has declined in recent years, it remains significant. Reductions of these imports due to increased domestic production has improved the affordability of petroleum products. In addition, the increased production of natural gas has caused the Henry Hub spot price for natural gas to drop from $9.08 per mcf in 2009 to $3.84 per mcf in 2013.

Construction of new infrastructure to meet growing demand and the replacement of aging infrastructure can cause prices to increase. Absent these investments, capacity constraints could cause even larger price increases. Natural gas infrastructure constraints in the Northeast are projected to result in significant electric price increases for the coming winter. The lack of sufficient capacity to move propane to meet the peak demand during last winter's extreme weather resulted in physical shortages and record high prices to consumers.

Investments in energy infrastructure do not necessarily mean costs will increase since there are investments that can improve efficiency and reduce costs. While prices might increase to pay for the needed investments, the focus in this analysis should not be on prices but rather costs or bills. If prices increase and costs/bills decline there is a net economic benefit. Continued federal support for the Weatherization Assistance Program and the Low Income Home Energy Assistance Program is necessary.

For example, in the power grid, voltage optimization technologies can lower line-loss, improve power quality, reduce peak demand, and result in net savings. Investment that improves efficiency and creates savings can provide for an internal rate of return that can cover the cost of the investment. Energy efficiency improvements will, in time, recover the cost of their investment. The challenge is when these investments require a longer payback than other competing investments, but still make sense from an energy policy and public policy perspective.

Key Questions from DOE

In the course of this inquiry the Department of Energy has identified some key questions and NASEO offers the following responses to those most relevant to state energy offices.

- What are the best ways to ensure a safe, reliable, secure, affordable and environmental sustainable energy network while still taking hold of the economic opportunities?
    - The best way to accomplish this objective is to identify infrastructure that due to its age, criticality and vulnerability may need to be replaced or require additional investment to assure its continued safe and reliable operations. In addition,

infrastructure investments required to adapt to changing sources of supply and market conditions will also need to be identified. The need for new natural gas pipelines to increase the capacity to move supplies from new gas fields that are not well connected to the existing natural gas interstate pipeline network are important, as is the need to be able to supply new gas-fired generation. Clearly, the increased reliance on the movement of energy resources by rail, principally, coal and petroleum, creates a new set of risks and costs that need to be better understood. We are seeing some evidence of capacity constraints on the rail system that have affected the timely delivery of coal and petroleum products in some regions of the country, while displacing agricultural commodities. Working with the private sector, states need to identify options to help assure that the required investments are made. State energy offices are prepared to work in partnership with the private sector and federal officials to address these issues.

- Energy assurance planning and preparedness directly contributes to these objectives. We must plan to respond more rapidly to energy disruptions that can occur due to: infrastructure failures, which can become more frequent with age; extreme weather events; and physical and cyber-attacks. The more rapidly we can return systems to normal, the lower the human and economic consequences. The cost of this preparedness is relatively small compared to the consequences it can minimize. As part of this effort, longer term actions and investments in energy infrastructure are needed to reduce the risk of the consequences when they fail or are disrupted. This effort is detailed in the National Infrastructure Protection Plan (NIPP) which was updated in 2014, with an emphasis on building resiliency through public-private partnerships. The update to the Energy Sector Specific Plan (SSP), which serves as an annex to the NIPP, is currently underway and there is an opportunity to assure that this plan further articulates the importance of this work at the federal, state and local levels. NASEO believes every state, territory, and tribal government should maintain an energy assurance plan that is kept up to date, tested and improved by periodic exercises and lessons learned from real events. In addition, those responsible for the implementation of the plan should be trained and have periodic refresher training as part of workforce development.
- Responding to disruptions in petroleum supplies as we have once again seen as a result of Hurricane Sandy and this past winter's propane shortage, is hampered by effective mechanisms for sharing information between the public and private sector due the diversity of companies that produce and supply petroleum. DOE should conduct a study to identify possible options to improve situational awareness and the ability to share information with the federal and state governments while being respectful of the intent of state freedom of information laws and the reason for which anti-trust laws were originally enacted. The Energy Independence and Security Act of 2007, Section 805, provides for an assessment by the Energy Information Administration of resources and authorized appropriations to "enhance the quality and scope of the data collection necessary to ensure the scope, accuracy, and timeliness of the information needed for efficient functioning of energy markets and related financial operations." It also provides for EIA to "share company-level data collected at the state level with

each state involved, in a manner consistent with the legal authorities, confidentiality protections, and stated uses in effect at the time the data were collected, subject to the condition that the state shall agree to reasonable requirements for use of the data, as the Administrator may require." This activity should be implemented.

- Will existing authorities for siting, permitting and planning allow the nation to achieve long-term security, economic and environmental goals?

    - Although there is a need for state, federal, and private partners to come together and plan across particular energy sectors, there is no existing forum for the discussion of this scope. Even within the electricity sector, there is a need for a state or group of states to have the ability to consider where distributed generation, transmission and distribution (T&D), storage, demand response, and natural gas are examined in this larger context. State public utility commissions traditionally have focused on the T&D and utility scale generation and less so on a more complete picture in an increasingly fragmented electricity system, ranging from greater customer control of their energy use, rooftop solar, micro-grids, CHP, etc. For example, activities in New York and Hawaii are addressing these issues in a more holistic manner.

- What are the lessons learned from current state, tribal and regional efforts to develop and modernize energy infrastructure that could be shared with other states and regions?

    - All states do engage in strategic energy planning, which should address efforts to develop and modernize energy infrastructure. Under the federally-funded State Energy Program (SEP), states have used a portion of these fund to support policy, planning and energy security. Between 2010 and 2014, states dedicated 32 percent of the SEP funding to support these efforts[5]. To assist states in this area, NASEO prepared the State Energy Planning Guidelines, which outline a process and broadly applicable policies and programs for states that are developing or updating their state energy plans. States' comprehensive and strategic energy plans provide a framework for meeting energy, economic, and environmental goals. NASEO has compiled a collection of state energy plans, and has prepared guidance for comprehensive energy planning. In the process of preparing these guidelines. NASEO collected state energy plans from 38 states and the District of Columbia to establish a baseline of energy planning processes, plan elements, and market implications. These plans are a resource that can provide useful insights as to how states have approached this need for comprehensive planning. See: http://www.naseo.org/stateenergyplans
    - Beginning October 1, 2014 NASEO, with DOE support, has initiated a new multi-year project that builds upon its work on energy security and strategic energy planning. This pilot program is called Energy Market and Planning (E-MAP). It

[5] Source: DOE, Energy Efficiency and Renewable Energy, Weatherization and Intergovernmental Programs Office.

will provide for a more comprehensive market and policy design approach that utilizes new analytical and solution frameworks to address energy system interdependencies; maintain investment return, affordability, and reliability; and accelerate near- and long-term actions. NASEO believes a few states have demonstrated elements of this type of comprehensive approach and could provide solutions for other states to adapt and emulate. Three states that are interested in supporting this effort and that have demonstrated capability to undertake a more comprehensive strategic approach will be selected to participate in this pilot based on specific market and planning criteria (*e.g.*, grid integration challenges, state energy planning process, policy environment, and infrastructure vulnerabilities). Each state selected would engage public and private sector energy leaders from state energy offices, regulatory utility commissions, legislatures, the business community, utilities, trade associations, and other key energy stakeholder groups. NASEO will work with DOE and the selected states to prepare energy profile trends and needs assessments to establish a baseline. NASEO will also provide guidance and support in an advisory capacity and draw from experts in the private sector and federal government. Building on the outcomes from the three E-MAP states, NASEO will in year two begin work on creating a toolkit for other states to adapt and provide training on the use of the tool kit. It is expected that the results from the planning efforts in the three pilot states may well help inform the second year of the Quadrennial Energy Review.

- How would enhanced coordination allay some of the jurisdictional issues now and moving forward?

    - Efforts such as the QER contribute to the dialogue that is needed and which can provide a foundation upon which better multi-state regional coordination can be built. DOE can contribute to this by working with both existing regional organizations to address this issues identified during this first year of the review and to support other forums as needed to provide for a better and deeper understanding of issues which are often complex and not well understood by state policy makers and elected officials. NASEO and the state energy offices are committed to work with DOE on this activity.

- What are the data needs across the natural gas, liquid fuels and electricity sectors that will enhance policymaking and infrastructure modernization?

    - NASEO has, since its inception, recognized the importance of energy data to make informed decisions in support of program, policies and legislative actions needed to shape our energy future. To meet this objective, NASEO has supported expanded federal funding for the Energy Information Administration to assure that the data needed is available and produced in a timely manner and that the quality of the data is maintained. In addition, the NASEO Energy Security Committee has worked with EIA to improve the quality and accessibility of state energy data and EIA should be recognized for the work it has done in support of state's needs. One prime example is the State Heating Oil and Propane Prices

(SHOPP) survey. This an excellent example of a true federal and state partnership that was once again invaluable in addressing both the propane and heating oil shortages seen over the winter of 2013/2014 in the Midwest and Northeast. EIA has now expanded this program to a number of additional states for the coming winter. EIA can also assist states through ongoing outreach efforts to help states understand the data and how to best analyze and understand what it means.

- How will states, local governments and tribes ensure the development of a skilled workforce?
    - States understand the importance of a skilled work force and through their education system, colleges, universities, and community colleges offer a diverse set of resources to train the skilled workforce needed for the future. The nation's economic growth has been driven by new technologies and innovations that required a workforce skilled with the management, deployment, and operation of increasingly complex and interdependent systems. This is a serious challenge that must be addressed at the state level with the support of the federal government. The economy runs on energy and the energy infrastructure investments needed for the future cannot be built without a skilled workforce. Retiring energy workers are creating a severe skills gap.

- What innovative state programs have national significance and could be replicated?
    - Expanded federal support for the State Energy Program would be the most important near-term activity.

- What infrastructure needs exist in order to meet your state energy policy goals (i.e., fuel and heating oil supply security, renewable portfolio standards)?
    - NASEO agrees with the Department of Energy's position that infrastructure needs vary by region and must be considered from both the state and regional perspectives. Some states are reliant on infrastructure in other states so a regional perspective can be important.

- What are the financing needs that will support states' infrastructure goals?
    - One recent example of a mechanism that might be employed by other states to meet their infrastructure needs can be found in New Jersey. In July 2014 the State of New Jersey took steps to minimize the potential for future major power outages and increase energy resiliency by establishing the New Jersey Energy Resilience Bank (ERB), the first of its kind in the nation to focus on energy resilience. Utilizing $200 million made available through New Jersey's second Community Development Block Grant-Disaster Recovery (CDBG-DR) allocation, the ERB

will support the development of distributed energy resources at critical facilities throughout the state[6].

- As of March 2014, NASEO's State Energy Loan Fund (SELF) database is tracking 79 financing programs and green banks in 44 states and territories, representing a total of over $3 billion in capital available through state energy offices and their partners for energy efficiency, renewable energy, and clean technology deployment. While the majority of capital made available through these loan programs are focused on delivering energy efficiency and small-scale renewable energy to residential, commercial, and institutional buildings markets, some states have begun to pioneer with larger-scale financing and investment programs for the non-building sectors. Key examples include:
  - The Louisiana Alternative Fuel Vehicle Revolving Loan Fund and the Mississippi Alternative Fuel School Bus and Municipal Motor Vehicle Loan Program, through which the energy offices assist local governments and school districts in financing fleet conversions to alternative fuels;
  - The Iowa Power Fund, a $75 million funding program promoting early stage commercialization of large-scale wind, biomass, and biofuels technologies using a performance-based repayment approach;
  - The AlabamaSAVES revolving loan fund, which finances Combined Heat and Power (CHP) projects within its energy efficiency and renewable energy financing portfolio;
  - The Alaska Emerging Energy Technology Fund provides grants from the state to cover the risk of bringing new technology to market;
  - The continued exploration of state loans, incentives, and funding for district energy systems; and
  - The continued expansion of energy savings performance contracting (ESPC) by state and local governments to deliver energy improvements to water and wastewater facilities and alternative fuel infrastructure.

  NASEO has supported energy offices' efforts to expand, consolidate, and align their financing programs with the energy, economic development, and infrastructure modernization priorities and needs of their state. In particular, NASEO's Transportation program is exploring the optimal use of state funds to leverage greater private sector investment in alternative fuel infrastructure and vehicles, both for fleets and individual customers. NASEO has also supported state efforts to use bond financing (and in particular, federally-subsidized qualified energy conservation bonds) toward financing infrastructure improvements in transit and increasing installed capacity of renewable energy generation.

- Where are there specific bottlenecks in building new infrastructure to meet changing demands (*e.g.*, QER meetings in the Bakken and New England were held to specifically explore infrastructure constraints, to understand the nature of those constraints and where there might be a federal role in addressing those constraints)?

[6] http://www.state.nj.us/bpu/newsroom/announcements/pdf/20140723erb.pdf

  - The federal government can play a role as a convener to help stakeholders come to a common understanding of the needs, the costs and the benefits of new energy infrastructure. Private sector investors rightfully expect that investments they make will generate a return on equity and make decisions accordingly. What may be in the private sector's economic interest may not always recognize the broader societal benefits that have a higher profile in the public sector. These different points of view are not always in conflict and the private sector relies on both public and private infrastructure to function.

- Availability of information, or lack thereof, is becoming an increasing issue--even for the QER analyses (*e.g.*, data on energy jobs is not well characterized; information on propane movement through the distribution network is not granular enough for rapid decision-making). What are other areas where the federal government could collect, aggregate or disseminate information to support state decision-making?

  - NASEO agrees that we need to continue to strive to improve the availability and quality of information needed to support good public policy which informs the private sector's investment decisions. More granular data will contribute to more efficient and transparent markets that can adapt more quickly to meet changing market conditions. The DOE's Office of Energy Policy and Systems Analysis and EIA should continue to play a lead role in this area which could also be supported by the expertise available in the national laboratories. The EIA Short-term Energy Outlook and Annual Energy Outlook with projections for future years are also important and valuable analyses that inform this process and can serve as a vehicle for addressing this need.
  - NASEO believe there needs to be improvements in petroleum and deliverable fuel data that provides for more systematic, transparent data collection and dissemination that would offer a clear system view similar to the view we have of the electric system.

In Closing

NASEO believes that for this review to be truly beneficial, specific actions should be taken to implement the recommendations within the agencies or groups identified. Furthermore, DOE should track and periodically report on the progress made towards implementing the recommendations.

Respectfully submitted,

/s/

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