Rockland Electric Company

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October 12, 2018

Honorable Aida Camacho-Welch
Secretary
State of New Jersey
Board of Public Utilities
44 South Clinton Avenue, 3rd Floor, Suite 314
Trenton, New Jersey 08625-0350

Re: 2019 New Jersey Energy Master Plan
Comments of Rockland Electric Company

Dear Secretary Camacho-Welch:

Enclosed for filing through the 2019 New Jersey Energy Master Plan ("2019 EMP") electronic portal are the comments of Rockland Electric Company ("Rockland" or "the Company").

The following documents with the Company's comments are enclosed:

- Executive Summary
- Attachment A - Clean and Renewable Power
- Attachment B – Reducing Energy Consumption
- Attachment C – Clean and Reliable Transportation
- Attachment D – Building a Modern Grid
- Attachment E – Sustainable and Resilient Infrastructure

Thank you for your attention to this matter.

Respectfully,

/s/_____
Margaret Comes

Enclosures

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EXECUTIVE SUMMARY

On March 23, 2018, Governor Murphy signed Executive Order 28, establishing one of the most aggressive targets in the nation – the conversion to 100% clean energy by 2050 and inaugurating the development of New Jersey's 2019 Energy Master Plan (EMP). The New Jersey Board of Public Utilities (BPU), serving as the lead agency responsible for the development and oversight of the EMP, established five working groups and held a series of stakeholder meetings in September and October, 2018 designed to provide analysis and recommendations to support a draft EMP to be presented to Governor Murphy by June 2019.

Rockland Electric Company (RECO or the Company) supports New Jersey's clean energy goals and encourages their implementation in a manner that brings the greatest benefits to all customer classes, including low and moderate income (LMI) customers, while also being mindful to minimize the cost impact to all customers. Recognizing that utility involvement will be key in achieving the State's goals, the Company welcomes the opportunity to play a central role and believes these goals are most achievable with the appropriate regulatory framework and program support.

The utility industry is undergoing a fundamental transformation. The power grid originally based on one-way electric flow is evolving into a more complex, smart, two-way electric grid with the goal of a cleaner and more resilient energy system. Various forces are driving this transition, including technological advances, state and federal policy decisions, more favorable economics for distributed energy resources (DERs), and a growing recognition of the need for clean energy and a shift of the state's energy production profile from reliance on outdated technologies that contribute to global climate change to cleaner energy sources. At the same time, the manner in which customers interact with electric utilities is changing. Customers expect more personalized services, easier access to their energy usage information, and more control over when and how they use their energy.

RECO embraces this transformative period in the industry and is prepared to respond to changing customer desires, advances in technology, and ambitious policy goals to bring about the change envisioned in the EMP initiatives. The State's electric utilities will be vital to fulfilling the strategic vision for the transformation of the electric industry set forth in New Jersey's 2019 EMP. This includes, but is not limited to:

- Making foundational investments to transition to a modern grid that enables two-way power flow, improves visibility, supports resiliency, and manages the integration of clean energy resources
- Developing and operating electric vehicle (EV) charging stations to kickstart New Jersey's EV market and decrease range anxiety, while also incentivizing EV charging at off-peak periods to reduce stress on the grid
- Deploying utility-owned clean energy assets on the distribution system, when cost effective, to provide benefits to customers
- Establishing utility pilot programs that can test the integration of clean energy technologies and markets, address technical and process issues, deliver results that are actionable and verifiable, and measure customers' responses to and satisfaction with various clean energy products
- Developing utility run energy efficiency, peak demand reduction, and demand response programs that can assist in keeping energy affordable for all customer classes through lower implementation costs

This transformation will not only employ new technologies and approaches to solving problems, but will also impact the people, processes, and organizations within utilities charged with carrying out these changes. Transformation to a new way of doing business will require focused and ongoing change management. The governance of this transition is critical to RECO's success in implementing these efforts. Proper staffing, resources, and funding will also be essential for a successful transformation.

Through its New York affiliate, Orange and Rockland Utilities, Inc. (Orange and Rockland), the Company has first-hand experience working with DER providers and operators, communicating and engaging with its customers to provide more granular and useful data via a variety of mediums, making innovative strategic investments to allow for continued safe and reliable delivery of electricity, and developing a cleaner, more resilient, affordable energy system. The Company continues to incorporate clean technologies such as solar, energy storage, and energy efficiency ("EE") into its planning, operations, and market activities.

For the above reasons, and drawing from the experience and lessons learned through Orange and Rockland's efforts, RECO offers the following comments for each of the five notices issued by the BPU.

Attachment A - Clean and Renewable Power

Clean and Renewable Power

Shifting New Jersey's fuel mix to clean and renewable sources of energy is critical to accomplishing the State's clean energy goals. RECO supports New Jersey's efforts to transition to 100% clean energy by 2050 and has begun efforts to allow increased penetration of renewables on its electric delivery system. Of particular importance to this transition is simplifying the process for customers and third-party developers to interconnect DERs to the electric distribution system. In removing barriers to interconnection, RECO has facilitated greater penetration of DERs on the electric delivery system, enhanced the developer experience, and increased customer satisfaction.

RECO has made significant investments in streamlining its interconnection processes for distributed generation ("DG") projects, increasing the transparency of its interconnection approval processes and preparing for greater amounts of DG deployment. As of September 30, 2018, 605 photovoltaic ("PV" or "solar") installations have been interconnected by the Company in its service territory, resulting in a total of 15.5 MW. In addition, there are 121 projects currently being proposed, totaling an additional 10.7 MW of capacity.

General

1. For the purposes of the Energy Master Plan (EMP) and reaching Governor Murphy's goal of 100% clean energy usage in New Jersey by 2050, how should clean energy be defined?

Response: The definition of clean energy should build upon the definition set forth in the 2015 EMP[1]. The definition should be flexible, innovative and allow for emerging technologies in the energy sector, thereby facilitating the implementation of a portfolio of clean energy resources that will support an efficient, reliable and resilient grid. Clean energy should be defined in the context of a technology's improved environmental impact, including the reduction of carbon emissions. Clean energy technologies can be either renewable or non-renewable. To meet the goal of 100 percent clean energy usage, a portfolio of technologies must be developed, and energy efficiency should be a tool to reduce energy consumption so that the renewable resources can meet the 2050 energy requirements. Utilities should be allowed to recover lost revenues resulting from these programs to remove the disincentive resulting from their reduction in energy sales. This portfolio must support system reliability and resiliency, as well as produce distribution and/or bulk system benefits, in addition to individual customer benefits. The financial impact of clean energy technology on all customers should be compared to the benefits provided, as well as to the costs and benefits of traditional infrastructure expenditures and existing generation technologies.

2. Should the definition of clean energy contain flexibility between now and 2050 to allow for transitional fuels to be used and phased out over time? What intervening steps should be taken to complete the transition?

Response: The definition of clean energy must be flexible enough to consider existing fuels, as well as innovative and emerging technologies. To transition to 100 percent clean energy, well-defined

[1] New Jersey Board of Public Utilities, New Jersey Department of Environmental Protection, New Jersey Energy Master Plan Update, December 2015, page 5-6

guidelines and timelines should be implemented at a pace that maintains a reliable and resilient grid. A transitional plan should build upon the goals set forth in the Clean Energy Act[2] to require an increasing percentage of clean energy which in turn will provide traditional fuels with a forecast of potential market share during the transition period. A transitional plan also has to be aware of the improving economics for the deployment of clean energy as technologies improve and critical mass in manufacturing and installation of the clean energy technologies increases. As such, flexibility is required to "bridge" this period and manage cost impacts on New Jersey residents and businesses. Nevertheless, it is important to keep in mind that existing generators' financial viability will depend on the pace of innovation, the level of any subsidies for clean energy, and the successful implementation of such technologies. Interim guidelines should be developed taking into consideration current and future bulk and distribution infrastructure needs, the cost-effectiveness of clean technologies, the impact on customers, and the flexibility to allow for innovative technologies and related programs and services.

Utility ownership is a model that may help bridge the transition, enable the market, and manage the cost impact on consumers. Utilities are well-positioned to understand the needs of the electric grid and the beneficial locations for integration of clean energy technology. Utilities, either alone or working with third-party providers, can leverage their existing knowledge of the electric grid for a smooth transition to clean technology deployment. Regardless of ownership, all clean energy technologies should support the reliability and resiliency of the electric grid and provide benefits to all customers.

For the utility to optimally balance the operation of the grid for reliability, availability, efficiency, and cost of the clean energy resources, the grid must be modernized to allow for command and control of the resources through robust communications (as further discussed in the Building a Modern Grid comments).

3. What is the most significant obstacle to getting to 100% clean energy by 2050? How can the state address it?

Response: The most significant obstacles to achieving 100% clean energy by 2050 are the cost impact on customers associated with the deployment of new clean energy technologies, the need for additional state policies and financial mechanisms to mitigate that cost impact, and the need to ensure the reliability of the grid in this transformative period.

The benefits of utility ownership of clean energy assets may be a way to mitigate the cost of clean energy technology deployment. Allowing utility ownership of clean energy assets, at least in the near term, will use the expertise of the utility to interconnect clean energy assets into the distribution system in locations where it will provide benefits to all customers, thereby having a positive impact on the affordability of energy to all customers. Long term contracts, while providing the financial support necessary to deploy and maintain clean energy assets, may not encourage the most beneficial locations for such assets resulting in some assets being over-compensated for the benefits they provide to the distribution system. Further, energy generated by utility-owned assets will reduce the utility required energy purchases, thereby directly impacting the cost of energy to customers.

[2] P.L. 2018 Chapter 17, enacted May 23, 2018.

Importantly, all goals and timelines established, whether interim or for 2050, must provide for the reliable operation of both the bulk and distribution electricity systems and the utility's statutory obligation to provide safe and reliable service.

Transition and Technology

4. How can the State immediately begin to transition to clean energy production and distribution? What intervening steps should be considered to clean existing technology? How should stranded costs be addressed?

Response: In order to accelerate the transition and assist in setting interim goals, utility pilot programs or projects can be used. Such pilot projects will help address technical and process issues and are aimed at delivering results that are actionable and verifiable. These pilot projects should: 1) test new technologies and business models; 2) measure customers' response to and satisfaction with various clean energy products; 3) incorporate clean energy technology into utility planning and operations processes; and 4) evaluate cost effective ways to integrate clean energy.

The State may also immediately begin the transition by working with the various stakeholders to set goals and deadlines for deployment of clean energy assets at a pace that will minimize negative impacts (*e.g.*, the early retirement of existing generators, the interconnection of clean energy assets prior to the development of standards, and the improper cost shifting between participating and non-participating customers) to customers and the utilities. Policy and Interconnection working groups should be established to address issues and concerns with the integration of new technologies to the grid. In addition, the impact of the transition on utility rates must be considered.

Existing clean energy technology should be evaluated to determine whether it is more cost effective to retrofit existing assets to be "cleaner" or whether new clean energy assets should be deployed. Utility ownership of clean energy resources can allow the State to move immediately toward its clean energy goals. Meeting these goals will require the accommodation of a variety of ownership structures of clean energy resources, including utility ownership. The flexible ownership structure will help to maximize the likelihood that clean energy resources are deployed to those locations on the distribution system where they can enhance efficiency, reliability and resiliency. Utility-owned clean energy resources, where appropriate, provide additional tools for the utilities to continue to provide safe, reliable, and affordable services.

5. How should the state analyze the construction of additional fossil fuel infrastructure during the transition? How can the state plan to accommodate this infrastructure in both its short-term and long-term clean energy goals? What statutory or regulatory changes will be needed for the state to make and implement these determinations?

Response: While the goal is to deploy clean energy, the BPU should also consider allowing traditional infrastructure to remain in place until it is operationally and reliably feasible to retire the asset. Utilities have production and transmission assets in place operating at or better than environmental regulatory requirements. These assets are currently being paid for by ratepayers and to the extent these assets assist in bridging New Jersey to the next transformative period, we should continue their useful life so as to facilitate the transition, avoid stranded assets and reduce cost impacts. Existing fossil fuel infrastructure assets are economic drivers in local communities by providing tax relief, employment and economic gains which would be harmful to communities and the State should they prematurely retire.

Finally, to the extent existing assets represent fuel diversity, they should be preserved and left operational to provide system resilience and operational flexibility during periods when clean energy is unavailable or to provide additional bulk power services (*i.e*., regulation and frequency control).

6. How should the state invest in and encourage innovative technologies for renewable energy and energy efficiency?

Response: A holistic approach must be used to achieve 100 percent clean energy. This approach should include input from a variety of stakeholders, including developers, customers, local municipal / community organizations, and utilities. As the BPU evaluates the replacement for the existing SREC program, support for solar PV must be evaluated in the context of support for other clean technologies. The State should support investments that will transform the current system into a modern grid that is adaptable to the changing needs of the interconnected resources, as well as the utility's needs to interact successfully with third party resources and meet the utility's statutory requirement to provide safe and reliable service. Energy efficiency is the least cost energy solution that should be the first step in lowering energy consumption so that investment in more expensive renewable energy is mitigated. Demand response programs can be designed and used to reduce peak demand requirements and avoid the need to dispatch inefficient generation.

Utilities should be able to recover costs associated with program offerings and lost revenues. In many states, there are recovery mechanisms that allow utilities to recover lost revenues resulting from energy efficiency programs and DER production in order to remove the disincentive from implementing these initiatives. With the proper regulatory construct that removes this disincentive, utilities are well-suited to implement these proven energy efficiency efforts, because utilities have strong customer relationships, understand their customer's energy needs, and are considered to be a trusted energy resource.

To encourage the development and deployment of innovative technologies, the State should allow pilots or demonstration projects through which utilities partner with third parties to deploy and test a variety of technologies targeting renewable energy and operational goals. These partnerships will help to develop new business models that will allow for the deployment of innovative technologies and renewable energy in a cost-effective manner. The pilots or demonstration projects could include utility incentives to deploy non-traditional energy efficiency and renewable investments to encourage such partnerships with third parties to test new revenue streams, increase investments in clean energy assets, and to encourage the adoption of clean technology by customers. In addition, rate design should be reviewed and revised to provide customers with proper price signals that will allow them to respond appropriately to energy efficient technologies.

State Policy

7. Evaluate existing clean energy policies and programs: where are they most/least effective, and are they aligned with the 100% clean energy by 2050 goal? If not, what modifications can be made, if any?

Response: Utilities are well-positioned to understand the needs of the electric grid and the beneficial locations for integration of clean energy technology; therefore, State policies should leverage and further engage utilities in the development of clean energy to allow for a smooth transitional period. For example, energy efficiency programs are currently implemented at the State level. These programs

are effective when implemented by utilities since they are trusted advisor and understand their customer's energy needs. As a result, energy consumption would decrease more rapidly enabling the State to achieve its ambitious 100% clean energy by 2050.

In addition, in an effort encourage more cost effective bulk power upgrades, the State should support the transfer of renewable energy between regions and States. Offshore wind is an example where developing regional projects (rather than individual) may help avoid suboptimal system development, higher project risk for developers, and higher costs for customers.

8. How should the state integrate low use property, such as brownfields and blighted zones, into new clean energy economy development?

Response: RECO supports the development of low use properties including better use of brownfields and blight zones rather than retirement or degradation of forest and farmland. This should be done with care and concern if these low use properties are in low income and poor economic zones.

9. How should the state address the baseload needs v. intermittent elements of clean energy generation? What is the role of energy storage in the conversion to 100% clean energy?

Response: RECO supports the 2050 clean energy goal. RECO recognizes that a utility's ability to meet its baseload needs with 100 percent clean energy generation is challenging but can be accomplished if the utility is allowed to take actions to meet its statutory obligation and mitigate stranded costs. The utility has a statutory obligation to provide safe and reliable utility service to its customers therefore that the utility's baseload needs must be met for basic operational purposes. State policy must also allow for traditional utility infrastructure investments and generation if third parties are unable to produce a sufficient amount of clean energy in a timely manner to meet the utility's statutory obligation, paid for by ratepayers, and to the extent they assist in bridging New Jersey to the next transformative period, operations should allow for continuation of their useful life so as to facilitate the transition, avoid stranded assets, and reduce cost impacts. Existing fossil fuel infrastructure assets are economic drivers in local communities by providing tax relief, employment and economic gains, loss of these benefits would be harmful to local communities and the State should they prematurely retire. Finally, to the extent existing assets represent fuel diversity, operational flexibility during periods clean energy is unavailable, and additional bulk power services (*i.e.*, regulation and frequency control) they should be preserved and left operational to provide system resilience.

One of the challenges with intermittent resources, such as solar PV, is its low co-incidence with distribution system load. In general, solar power is 34% coincident with system peak, *i.e*., a 10MW solar project provides only 3 to 3.4 MW towards baseload. Consequently, utilities cannot rely solely on intermittent resources to support their baseload. On the other hand, a storage system is dispatchable and could be operated in a way that is near 100 percent coincident with peak. A solar PV system paired with storage may address the challenge of intermittency. Energy storage has the potential to transform the electric system. It can provide energy management, distribution capital project deferral, backup power, load management, frequency regulation, voltage support, increased DER integration, and grid stabilization.

Nevertheless, there are currently limitations to energy storage deployment. The cost of energy storage is still higher when compared to other DER technologies. Various DER market products and dual participation rules for DER to participate in different markets are currently being developed at the

Independent System Operator (ISO) level. Once the market matures for DERs and energy storage participation rules are solidified (along with a decline in the overall cost of energy storage technology), a higher level of energy storage penetration in the distribution system may arise. Energy storage has the potential to contribute significantly to meeting the baseload needs of the system, but the storage asset must work in parallel with the operational needs of the distribution system.

Planning and Zoning

10. How can clean and reliable power support the expansion of clean transportation?

Response: Electrification of transportation is crucial to achieving the State's clean energy goals. The evolving electric vehicle (EV) market requires investments to be made contemporaneously to yield both immediate and longer-term benefits. To stimulate EV adoption, the utilities should take a leading role in deploying EV charging infrastructure based upon customer needs balanced with system requirements. Also pairing EV chargers with storage may help to reduce demand charges, which in turn may help to make DC Fast Charging more economical.

If EV charging is unmanaged, there is potential for increased costs to utility customers, especially if charging occurs coincident with peak demand. Utility rates, *e.g.*, time-varying rates as well as the retention of demand-based rates, have proven to be an effective way to encourage EV drivers to charge at off-peak times.[3] As the EV population grows, this shift could also help improve system efficiency. With EV deployment in its early stages, utilities can begin to explore effective rate design considerations, *e.g.*, if EV charging is subject to proper price signals to guide charging away from system peak time periods.

The State should offer consumer education and outreach to encourage the expansion and adoption of clean transportation technology. Utility partnerships with auto manufacturers to offer rebates on EVs may also help to stimulate the EV market. See RECO's expanded responses to the Clean and Reliable Transportation questions.

Enhanced planning and operations capabilities are necessary to accommodate EV growth and the corresponding charging activity. Integrating storage with EV chargers should also be explored as it has the potential to lower the overall load consumption of the charging site. Batteries can be discharged during times of high demand (during utility peak loading conditions) and recharged during off-peak times. Using a storage system with EV chargers may also help utilities to avoid the need to build additional infrastructure required to the additional load from the EV charging location. Energy storage can reduce the site loading, requiring a smaller export of power from the utility.

11. Is there a role for communities in local energy planning and, if yes, what should it be? Are there opportunities for public-private partnerships to aide communities undertaking this planning?

[3] *See, e.g.*, New York State Energy Research and Development Authority ("NYSERDA") (M.J. Bradley & Associates, LLC), *Electricity Pricing Strategies to Reduce Grid Impacts from Plug-in Electric Vehicle Charging in New York State*, NYSERDA Report 15-17 (June 2015).

Response: As the State progresses its clean energy policies, part of its role should be to provide local communities with the education and tools necessary to help manage the deployment and operation of clean energy technologies in those communities. Communities should be engaged to further the expansion of clean energy technology, energy efficiency and demand response opportunities by working with the utility and third parties to conduct outreach and education on the benefits of emerging technologies and the impact on customer's energy usage.

Public-private partnerships should be considered with the appropriate consumer advocacy rules so that communities are well served with fact-based, accurate approaches to implementing new technology.

12. What portfolio mixtures can the state utilize in achieving its 100% clean energy goal? What can a transition portfolio mixture resemble in 2030 and what portfolio mixtures can the state utilize in 2050?

Response: The State should allow for flexibility in portfolio mixtures used to meet the State's goals. Energy efficiency should be used to reduce energy requirements in the near term, thereby moderating the amount of clean energy to meet 2030 and 2050 needs. A benefit cost analysis should be developed and conducted on the portfolio to steer the development and use of cost-effective, beneficial clean technologies. Whatever portfolio mix is developed, the technologies chosen must contribute to the reliability of the electricity system.

Interim goals should be set for the amount of clean energy to be deployed during the transition years, allowing for a portfolio mixture that is reliable and cost beneficial, regardless of the technology mix. Initially allowing flexibility will facilitate the transition to clean energy technologies, as well as allow for emerging technologies spurring future innovation.

13. Should changes be made to zoning and planning laws and requirements to allow for the development of clean energy generation?

Response: State policy in the deployment of clean energy should not supersede local zoning and planning requirements and furthermore, as the State progresses its clean energy policies, part of its role should be to provide local communities with the education and tools necessary to help manage the deployment and operation of clean energy technologies those communities.

Economic Growth and Workforce Development

14. How should the state address the workforce development needs associated with the transformation to 100% clean energy?

Response: Workforce development is critical to the utilities, as well as developers and other third parties. All parties, including utilities, will need the appropriate level of staffing with proper skill sets to integrate and maintain clean energy technologies effectively with the distribution system. With the introduction of these technologies, utility workforce development and training practices should be established so that companies have the resources required to monitor and operate adequately these new assets on the system. Key positions will need to be added and developed as these emerging technologies will require the management of new interfaces between the utility and the new technologies. The costs of all these required additional resources, whether personnel or equipment, must be recoverable by the utility.

15. How can the transition to 100% clean energy grow New Jersey's economy and create new innovative and high paying careers for New Jersey residents?

Response: As discussed above, the transition to clean energy will require different skill sets and a deeper understanding of clean technologies than is present in the workforce today. Integration of these technologies into the distribution and transmission systems will require training and the development of new skills that will evolve as the industry evolves.

Encouraging local hiring practices, hosting seminars, developing specialized training certifications and standardized higher education programs, and establishing an innovation center are some of the ways that the State could promote the creation of new high paying careers for New Jersey residents. Partnership among utilities, stakeholders, State and federal research labs, the BPU and in-state universities and technical schools could foster an increase in the skill set thereby leading to job growth for New Jersey residents.

16. How can the State encourage, require, or otherwise develop a robust supply chain for all clean energy industries?

Response: The State can encourage, require, or develop a robust supply chain for clean energy industries through the incorporation of clean energy benefits into tax policy, identification of economic development zones, and the development of utility economic incentive programs. There is also an opportunity for the State to encourage supply chain development through specific utility tariffs and rates that are designed to specifically encourage clean energy transformation.

Environmental Justice

17. How will the State consider and integrate overburdened communities into clean energy advancements?

Response: The State should take a holistic approach to integrate overburdened communities into clean energy advancements. Consideration of all contributing factors must be evaluated, including both energy generation and transportation. For example, establishing a community solar project in an overburdened community will not eliminate the negative carbon impacts from a transportation hub located within that same community. This issue must be evaluated by looking at the total picture, not just the negative impacts of energy generation sited within the community.

18. What efforts are most successful towards making clean energy and energy efficiency measures affordable and accessible to all?

Response: The utilities should enhance the implementation of clean energy and energy efficiency in their own service territories. Each utility understands the needs of its customers, has access to data on customer usage and bill payment history, and understands the best locations on its distribution system to locate clean energy technologies. For example, RECO implements a direct install program for its low-income customer segment. This program is more cost-effective than the State-run Comfort Partner's program and is designed to meet the specific needs of RECO's electric customers. As such, it has reached more than 80% of its Universal Service Fund customer population at a lower $/MWh than Comfort Partners. RECO has better access to its customer base and is able to customize communications to

encourage interest in energy efficiency. Customers are familiar with RECO and are confident in the products and services it offers. Allowing utility ownership of clean energy technologies may result in a more cost-effective program roll out to all communities.

19. How can the state play a role in ensuring that disproportionately impacted communities receive opportunities and benefits connected to the clean energy economy?

Response: As discussed in the Company's response to Question 18 above, RECO believes that clean energy opportunities and benefits should be provided to all customers. State support is critical in ensuring disproportionately impacted communities receive such benefits. Utility implementation of clean energy and energy efficiency programs can further steer the benefits of such programs to those disproportionately impacted communities.

Attachment B – Reducing Energy Consumption

Reducing Energy Consumption Stakeholder Meeting Discussion Points

RECO is committed to New Jersey's energy efficiency (EE) goals and recognizes the important role that EE can play in meeting the state's clean energy goals. EE programs have the demonstrated benefit of maximizing system efficiency which will lead to reduced greenhouse gas (GHG) emissions, lower customer energy costs and new job opportunities. EE as a distributed energy resource (DER) can contribute to the deferral of traditional capital improvements making alternatives more cost-effective.

Utilities are uniquely positioned to administer EE programs, as they are viewed by their customers as trusted energy advisors. Utility-run EE, peak demand reduction and demand responses programs offer the potential to keep energy affordable for all customers. Pairing AMI data with software data analytics and behavioral programs can provide for more customized actionable recommendations to customers. Small businesses can benefit from programs designed to help them manage their electricity use through more efficient lighting, refrigeration and cooling products – typical drivers of costs for small businesses. The private sector should assist utilities in the development of unique solutions to meet customers' needs in support of utility efforts to engage customers and reduce energy consumption and peak demand. Finally, incentives for commercial and industrial customers to participate in programs that allow them to manage their energy use through targeted demand reduction, as well as commercial HVAC and industrial equipment upgrades, can provide system-wide benefits for all customers.

General

1. What energy efficiency, peak demand reduction, and demand response program and systems will assist in helping keep energy affordable for all customer classes, especially as technology advances in areas such as electric vehicles or heating and cooling, which will potentially increase electric energy usage?

Response: Utility run EE, peak demand reduction, and demand response (DR) programs can assist in keeping energy affordable for all customer classes through lower implementation costs. For example, RECO's low income direct install program operates at a lower $/MWh than the State-run Comfort Partners program. This program has treated over 80% of RECO's Universal Service Fund customers. This high participation rate is a direct result of the unique relationship that utilities have with customers as their trusted energy advisor. Utilities should have the flexibility to implement programs based on program experience in other jurisdictions and synergy savings can be realized by offering similar programs where similar customer demographics exist. In addition, EE, peak demand reduction, and DR programs have proven to be least cost solutions to defer utility capital investments in constrained areas in need of infrastructure upgrades on the transmission and distribution system.

Advanced metering infrastructure (AMI) will enable the implementation of beneficial electrification and advanced technologies as well as encourage more informed energy use by driving more accurate and granular price signals. Utilities should explore the potential for implementing unique dynamic rate structures in response to the addition of electric vehicles and heating and cooling equipment on the electric grid.

2. With the coming requirement that all commercial buildings over 25,000 sq. ft. be benchmarked through EPA's Portfolio Manager, what programs should be created to help with benchmarking and reduction strategies?

Response: Utility programs can be designed to use software data analytics to convince customers to invest in EE and help reduce the upfront capital cost of the efficient equipment. Software data analytics in conjunction with customer usage data can be used to perform virtual audits for commercial buildings over 25,000 sq. ft. These virtual audits will identify upgrades along with estimates of the simple payback resulting from bill savings to help drive EE. The results from the virtual audit can provide a customized data comparison to industry benchmarks and provide recommendations to help customers reduce their energy consumption.

3. What are the key non-energy benefits associated with energy efficiency? How can their value best be considered in cost-benefit analyses?

Response: Non-energy benefits may include environmental, economic, and health and safety benefits. For example, carbon emissions including NOx and SOx are avoided when energy consumption is reduced. Reductions in peak demand can help mitigate high market price of generation during peak periods, and also delay the need for infrastructure investment by utilities. Investment in EE upgrades can also increase real estate values, develop sustainable jobs, and increase comfort in homes and productivity in businesses. Low income programs can help make customer bills more affordable and enable customers to pay bills timely and in full, thereby lowering utility uncollectibles.

4. What should the role of ratepayer funded programs, whether state or utility run, be in achieving reduction strategies?

Response: Through ratepayer funded programs, the unique relationship between the utility and its customers, including the utility's ability to engage customers as their trusted energy advisor, makes utility programs more effective at reaching customers in a cost-effective manner. Cost-effective programs will benefit all customers because every dollar invested provides for more than one dollar of avoided cost benefits.

With the exception of low-income programs, ratepayer funded programs should be cost effective and designed to reduce customers energy usage or shift usage from peak periods into lower cost periods.

5. What type of educational outreach is needed to advance energy efficiency throughout New Jersey?

Response: Marketing campaigns to increase the overall awareness of EE in residential, commercial, and industrial segments should be implemented. Targeted marketing campaigns including customer testimonials may be developed for individual programs to increase customer participation. Marketing efforts should highlight the benefits of program participation including bill savings and environmental benefits.

Technology

6. What advances in technology should be considered as part of a strategy to reduce energy consumption? What technologies could complement and advance existing energy efficiency and demand response systems?

Response: As mentioned above, software analytics, behavioral messaging, and AMI technology may be used as a platform for developing new programs. Software data analytics will identify end uses in need of upgrade and AMI will facilitate innovative rate designs to help customers reduce energy and peak demand throughout the year. Behavioral programs can engage customers to reduce energy and targeted messaging can facilitate usage reduction during peak periods. In addition, investments in emerging technologies can help identify the additional achievable potential for new energy efficient technologies.

7. What are the intermediate timeframes and pathways to these new or enhanced technologies and energy efficiency demand response systems?

Response: Utilities should be given the flexibility to explore new and advanced technologies for the purposes of reducing consumption. Software data analytics, behavioral programs and AMI can provide the pathways to implementing programs and identifying new technologies. Utilities are particularly qualified to implement these programs because they are trusted energy advisors and understand how and when customers use energy. Since 2009, Orange and Rockland Utilities, Inc. (O&R), RECO's affiliate, has implemented successful EE programs in its New York service territory, which RECO could leverage in New Jersey to ramp up similar programs within six to nine months of regulatory approval. O&R's EE programs are currently achieving energy reductions that exceed 0.5% of sales and demand response programs are reducing peak demand by 1.9%. Utilities should be able to recover costs associated with program offerings and lost revenues. In many states, recovery mechanisms exist that allow utilities to recover lost revenues resulting from EE programs in order to remove the disincentive to implementing EE programs.

8. How do we best utilize data analytics for energy efficiency?

Response: Software data analytics can be used in many ways including performing virtual audits and integrating AMI data to develop EE and DR programs. Pairing AMI data with software data analytics and behavioral programs can provide for more customized actionable recommendations to customers. Customer recommendations including project bill savings, simple payback, and identifying environmental benefits can help drive the acceptance of EE upgrades in homes and businesses. Data analytics can also be used by utilities to engage third parties to develop innovative solutions to drive further energy savings.

9. What is the role of block chain, IoT, big data, 5G, and other specific technologies in energy efficiency?

Response: Utilities should have the ability to explore these new initiatives and design programs that take advantage of these initiatives in conjunction with advanced technologies to increase the adoption of energy efficient technologies.

State Policy

10. How can the state play a strong role in reducing its energy consumption?

Response: State policy should incorporate EE as part of utilities' core business. Utilities should be allowed to invest and recover the costs of EE and DR programs just as they would in the case of

traditional capital investments. Allowing utilities to recover lost revenues removes the disincentive of implementing EE programs. In addition, allowing utilities to earn on the investment will fully engage utilities to encourage customers to participate in EE and DR programs and implement new and innovative technologies to help meet the State's ambitious energy goals.

11. Which strategies should be state-led, and which ones should be advanced by the private sector? What other players are important leaders in energy efficiency?

Response: Policy should be state-led, while the strategies necessary to meet the State's goals should be advanced by utilities as a result of the relationship with their customers and access to billing data. Utilities know their customer usage profiles and the unique characteristics of their service territories and how EE can benefit the customers and their system. The private sector should assist utilities in the development of unique solutions to meet customers' needs in support of utility efforts to engage customers and reduce of energy consumption and peak demand.

National organizations like the American Council for an Energy Efficient Economy ("ACEEE"), the Association of Energy Services Professionals ("AESP"), and the Peak Load Management Association ("PLMA"), are valuable resources to assist utilities in identifying best practices for EE and DR programs. The Company is a member of both AESP and PLMA and attends conferences to learn best practices and industry innovations in EE and DR program design and implementation. These forums also provide for networking among industry professionals who are implementing successful cost-effective programs across the county and provide opportunities to enhance program offerings utilizing the latest industry practices.

12. Should the state require energy efficiency in particular projects receiving state incentives?

Response: The state should require that EE be part of the project design for projects that involve new construction or renovations as a pre-requisite to receive state funding.

13. Should the state play a role in encouraging pilots of different "next generation" buildings? How could the state foster the implementation of net zero or passive buildings projects? How could that impact and restructure redevelopment efforts?

Response: The state should encourage pilot programs so that utilities can learn how net zero or passive buildings interact with the grid.

14. What Treasury design standards or procurement policies should be updated to reflect and encourage energy efficiency in state building designs or protocols?

Response: All state buildings should be benchmarked to determine whether they have the potential to reduce energy consumption. If so, the building should participate in utility-run EE programs. This would reduce the State's administrative burden and streamline their procurement processes.

Codes and Standards

15. What portion of the overall energy savings in the transportation, heating, processing, and cooling and electricity markets should be achieved through advanced and enhanced building energy codes and appliance standards systems?

Response: Market potential studies should be performed to determine potential energy savings by segment.

16. How should each sector – residential, commercial and industrial – be considered in terms of codes and standards updates towards reduced energy consumption? In terms of energy efficiency, are certain sectors more adaptable or important than others?

Response: While commercial and industrial programs are often less expensive to implement than residential programs, all segments should be targeted with cost-effective programs. This will allow all customers to benefit from programs and capture all achievable energy savings in order to meet the State's ambitious energy and carbon reduction goals.

17. What type of zoning changes or incentives should be considered related to green infrastructure? How can these be achieved?

Response: State policy in the deployment of clean energy should not supersede local zoning and planning requirements. As the State progresses its clean energy policies, part of its role should be to provide local communities with the education and tools necessary to help it manage the deployment and operation of clean energy technologies in its communities.

18. What are some examples of existing or potential advanced building energy standards or metrics? (Examples include: net zero energy, Passive House, Living Building Challenge, etc.) How could these be implemented in New Jersey to accelerate greenhouse gas emissions reduction in new and existing residential and commercial buildings?

Response: Utilities could design and implement programs that incentivize customers to build LEED certified buildings, net zero buildings, and passive homes in order to offset the upfront higher construction cost to accelerate the adoption of EE construction.

19. Are there barriers to implementing new energy efficiency codes for building inspectors? How can potential code updated be made less burdensome for inspectors in order to increase compliance and uniformity?

Response: Barriers include lack of understanding and compliance with building code standards. Training can be provided to building inspectors in order to increase compliance and uniformity. For example, Building Performance Institute (BPI) training can be provided to building inspectors in coordination with utility program implementation.

Security

20. How can energy efficiency and peak demand reduction strategies assist in ensuring enhanced energy security, reliability and resiliency in the energy markets?

Response: Utilities can implement EE and peak DR strategies to provide permanent DR to increase reliability and resiliency in targeted areas of the system. Major capital infrastructure investments can be substantially deferred, reprioritized, or even eliminated by alternative and less costly traditional infrastructure investments, as well as targeted non-traditional measures and alternative solutions, which may include EE and DR as part of a portfolio of solutions. This concept is further described in RECOs Response to Grid Modernization

21. Should strategies across the transportation, residential, commercial, industrial, and electricity generation sectors vary based on differing security risks?

Response: Strategies across the different sectors should vary based upon their different security risks.

Economic Growth and Development

22. What new or expanded manufacturing could be developed related to energy efficiency?

Response: Utilities can offer custom programs that rebate efficient industrial manufacturing processes from identified baseline technologies. In addition, emphasis can be placed on manufacturing processes that rely on fossil fuels to switch to cleaner more efficient electricity thereby reducing the reliance on fossil fuels and reducing carbon emissions.

23. What associated jobs and training will be needed in the new clean energy economy (particularly regarding reducing energy consumption)?

Response: Training in sustainability and maintenance of renewable distributed energy resources could be provided. For example, the New York State Energy and Research Authority (NYSERDA) implements an energy managers program where energy managers are placed in facilities at no cost for one year to provide large industrial customers with a manager to focus on energy costs. The program is designed to demonstrate that the energy manager will save the large facility more in identified energy savings than their annual salary.

24. What type of overall workforce training is needed in the energy efficiency industry, whether for maintaining systems, installation and inspection, or in other areas?

Response: Several organizations provide EE workforce training. For example, BPI provides energy efficiency training and certification in both the residential and commercial building sector.

25. What type of educational outreach is needed to advance energy efficiency in the workplace?

Response: Community colleges may offer training in conjunction with national organizations including BPI to offer curriculums and certifications to address EE.

Environmental Justice

26. How can the state be responsive in helping keep clean energy affordable in communities that are disproportionately impacted by the effects of environmental degradation and climate change? How

can the state play an active role in improving the condition of older building stock and encouraging energy conservation measures in communities that are disproportionately impacted by the effects of environmental degradation and climate change?

Response: Low and moderate income programs could be designed to target these areas to provide benefits to all customers.

27. What efforts are most successful towards making clean energy and energy efficiency measures affordable and accessible to all?

Response: Low and moderate income customers can be supported by leveraging programs such as direct install, community distributed generation opportunities and other subsidized programs. Low and moderate income programs could be designed to target these areas to provide benefits to all customers.

28. How can the state play a role in ensuring that disproportionately impacted communities receive opportunities and benefits connected to the clean energy economy?

Response: As mentioned above, low and moderate income customers can be supported by leveraging programs such as direct install, community distributed generation opportunities and other subsidized programs. Low and moderate income programs could be designed to target these areas to provide benefits to all customers.

Attachment C – Clean and Reliable Transportation

Clean and Reliable Transportation

RECO supports electric vehicle (EV) integration and the development of a robust EV market. RECO has begun multiple initiatives to enhance its tools and capabilities to support the growth of the EV market, including; partnering with a leading auto manufacturer to promote a rebate to its customers on an all-electric vehicle, developing online tools to facilitate informed EV decision making, participating in EV industry forums, and incorporating EV load growth into its bottom-up forecast methodology. In addition, the Company is a founding member of the ChargeEV coalition which advocates on behalf of transportation electrification initiatives in the state.

In the future, the Company supports approaches that allow for the greatest number of opportunities for the development of the EV market in New Jersey. RECO supports utilities owning, operating, and deploying charging infrastructure in its service territory as a means for Electric Vehicle Supply Equipment (EVSE) deployment until significant EV adoption enables a sustainable business model for third-party EVSE providers. RECO also recognizes the need for, and importance of, vigorous EV education and outreach efforts as well as new rate designs including expanded Time-of-Use (TOU) rates to encourage EV adoption in New Jersey.

General

1. What are the intermediate timeframes and pathways to new or enhanced clean transportation systems? What clean and reliable transportation goals should be set for 2030 and 2050?

Response: Electrification of transportation is crucial to achieving New Jersey's clean energy goal to reduce greenhouse gas emissions. New Jersey's recent launch of its forward-looking goals and the development of the EMP are good first steps to encourage adoption of EVs within the State. The development of the EMP for New Jersey will provide parties with the opportunity to explore important initiatives needed to advance the adoption of EVs such as the electric utilities' role in providing infrastructure and innovative rate design to accommodate the needs and electricity demand of EVs and EVSE. Increased outreach and education will also be key to the success of EV adoption. There is significant potential for growth of EVs in RECO's service territory. Recent data indicates that there were up to 300 EVs in the Company's service territory as of 2017. The Company estimates that to reach the Zero Emission Vehicle (ZEV) goals there will need to be over 9,600 EVs in its territory by 2025. The Company is committed to participating fully in this important effort.

2. What is the most significant obstacle that the state will face in implementing a clean transportation plan by 2050? What are some solutions to these challenges?

Response: Range anxiety for both prospective and current EV owners continues to be one of the leading barriers in the clean transportation sector, presumably resulting from the lack of publicly available charging stations. As installation of publicly available fast chargers increases, adoption of EV will increase.

Utilities are particularly well-suited to spur the development of EVs and must be proactive concerning the development of EV charging infrastructure. To help facilitate EV growth, utilities should own, operate and deploy DC fast chargers (DCFC) and Level 2 chargers, helping to reduce the range anxiety

for prospective EV buyers. Utility ownership would provide a means for EV deployment until significant EV adoption allows a sustainable business model to exist for third party providers.

If EV charging is unmanaged, there is potential for increased cost to utility customers, especially if charging occurs coincident with peak demand. Utility rates have proven to be an effective way to encourage EV drivers to charge at preferred times.[4] As the EV population grows, this shift could also help improve system efficiency. With EV deployment in its early stages, utilities can begin to explore effective rate design considerations, *e.g.*, if EV charging is subject to proper price signals to guide charging away from system peak time periods. For these reasons, the use of time-varying rates for EV charging, as well as the retention of demand-based rates for EV charging, should be considered to encourage EV drivers to charge at preferred times.

3. What is the role of clean transportation in freight movement? What should the State do to promote low-carbon freight/goods movement?

Response: To support the adoption of clean transportation in freight movement, the State should enable utility involvement, similar to the residential/passenger vehicle market. Utility ownership and deployment of chargers to further benefit fleets will lead to higher electrification penetration for fleet vehicles. This will also allow utilities to understand the usage characteristics of fleet vehicles and deploy innovative rate design structures that might further the adoption of electric fleet vehicles throughout the State.

4. How can clean transportation solutions impact goods movement and economic growth?

Response: Clean transportation options are equally as important for commercial and public fleets as for private vehicles. On a per vehicle basis, medium- and heavy-duty vehicles, which are commonly used in the transport of goods, emit higher quantities of pollution than light-duty vehicles. Fleet vehicles, such as medium-duty delivery vehicles, public transportation and construction/port operations equipment, often charge in concentrated time periods at night in co-located facilities such as depots. The impact of medium- and heavy-duty vehicle grid charging on the system peak should be considered and coordinated with utilities that will need to manage the electric delivery system to accommodate significantly higher peak loads in some areas.

State Policy

5. What are the regulatory or statutory barriers to the expansion of low- and zero-emission vehicles?

Response: State policies that restrict the ability of utilities to own and operate EV charging stations dampen the expansion of low-and zero-emission vehicles. Utility ownership and operation of these charging stations should be allowed along with the ability to recover the costs of procurement, installation and operation of these chargers as a capital asset. Similarly, policies that restrict the

[4] *See, e.g.*, New York State Energy Research and Development Authority ("NYSERDA") (M.J. Bradley & Associates, LLC), *Electricity Pricing Strategies to Reduce Grid Impacts from Plug-in Electric Vehicle Charging in New York State*, NYSERDA Report 15-17 (June 2015).

utilities' ability to implement innovative rate structures are inherently counterproductive to this expansion effort.

6. What are the clean fuel transportation approaches the State should consider to achieve its zero emission vehicle (ZEV) goals of 330,000 ZEVs on the road by 2025?

Response: Utility planning and operations capabilities should be proactive to accommodate EV growth and the corresponding charging activity. To increase EV adoption, utilities should take a leading role in deploying EV infrastructure to help customers reduce range anxiety. The State should also consider allowing utilities to partner with third parties to develop and file pilot programs to evaluate innovative rate designs, or test new business models and technologies to support the future growth of an EV market.

Robust education and outreach efforts for prospective EV buyers will also be critical. Utilities should assume a proactive role in informing prospective EV buyers of different metrics such as the total cost of ownership (TCO) of EVs as well as various state, federal and utility incentives currently in place to help purchase an EV.

As mentioned in the Company's response to Question 2 above, utility rates have proven to be an effective way to encourage EV drivers to charge at preferred times. New innovative, easy to understand rate structures should be considered which can provide drivers with cost-competitive EV-specific rates, which have the potential to create cost savings for consumers relative to the cost of gasoline.

The State should also consider rebates for residential EV chargers as well as the ability for utilities to own, install and operate commercial EV chargers to further increase the adoption of EVs both in the residential sector and at the fleet level. Approving rebates for residential charging can help drive the installation of advanced Level 2 chargers which in turn will provide utilities and the State additional visibility into charging behavior and the potential of EVs to be used for grid benefits. Partnering with utilities to aid in the electrification of state and municipal fleets will bolster New Jersey's position and make it a leader by example.

7. What actions can the state take with its own fleet to demonstrate clean transportation leadership? How would these actions affect service reliability?

Response: The State's position as a leader by example is critical to encourage the development of clean transportation in New Jersey. The purchase of EVs for state fleets and the requirement that public transportation be electrified are the most demonstrable ways in which the State can drive the clean transportation sector. In addition, the support of utility ownership of EV charging stations, and the expeditious review and approval of filings requesting the installation or extension of specific EV initiatives and programs will also demonstrate clean transportation leadership.

8. What strategic incentives should be considered for encouraging the adoption of zero emission vehicles, plug in hybrids, and other low emission and clean fuel transportation?

Response: Please see the Company's response to Question 6 above for strategies that could apply to these vehicles.

9. What best practices can the state adopt from other states and local governments that have advanced clean transportation goals?

Response: Other states provide good examples of best practices to follow in the development of the New Jersey's clean transportation goals. In New York, the Public Service Commission held an EV technical conference to solicit input from all of the State's investor-owned utilities and the EV industry. All experts agreed that education and outreach, along with specific EV rates, are key components of any EV program. The industry also agreed that utilities need to play a significant role in jump starting the EV market through the ownership of early stage charging infrastructure. Utilities can implement programs, such as make-ready (i.e., electrical infrastructure required to operate charging stations) and utility ownership, to enable deployment of commercial charging infrastructure which will, in turn, help to reduce range anxiety for prospective EV buyers.

In California, the Public Utility Commission approved utility involvement in the EV charging landscape. The State's utilities are deploying a combination of make-ready (Southern California Edison) and utility ownership of EV chargers (San Diego Gas and Electric). In fact, the top five states with the highest EV market share (*i.e.*, California, Washington, Oregon, Hawaii and Vermont) all allow some form of utility ownership of EV chargers.

10. What actions can the state take to help promote clean and reliable transportation at the state's ports?

Response: Electrification of ports and other heavy industry represents a significant opportunity to meet New Jersey's clean transportation goals. Medium- and heavy-duty equipment, commonly used in ports and heavy industry, is often well-suited for electrification due to the performance characteristics of electric drives. In addition, medium- and heavy-duty vehicles have higher emissions than light-duty vehicles on a per vehicle basis. However, because of the concentrated nature of fleet charging behavior, the potential for impacts to system peak load is high. The State should coordinate closely with utilities to develop infrastructure plans to ensure that utilities have sufficient capacity and distribution infrastructure capability to accommodate the charging of port and construction equipment in advance of its conversion.

11. What role should utilities play in clean transportation?

Response: As stated in the Company's response to Question 2 above, utilities can play a significant role in advancing New Jersey's EV market. Utility ownership, operation and deployment of public charging infrastructure will help to reduce range anxiety for potential EV owners. Further, utilities are positioned to deploy the DCFCs quickly and efficiently in strategic high use areas, and can deploy, own and operate them to benefit the distribution system while also offering various rates to promote off-peak charging. Utilities also have a role to play in customer outreach and education to better explain the costs and benefits of EV ownership. Education and outreach may include bill inserts, social media blasts, and drive-and-ride events, among others.

Utilities also have an important role to play in determining EV rate structures necessary to incent EV adoption as well as to promote off-peak charging. A significant concern to utilities is the impact on peak load that EVs can have on the electricity delivery system as rates of adoption increase. When a large number of EVs plug-in to recharge at the same time (*e.g.*, after returning home in the evening), the

potential exists for negative system impacts due to significant load occurring at the same time. Time-of-use and other EV-specific rates can mitigate this by providing price signals to customers to encourage charging at optimum times that would spread out the load over a longer period of time not coincident with the system peak (*i.e.*, managed charging).

Technological Advancements

12. What existing and emerging technologies need to be incorporated into future transportation planning?

Response: Enhanced planning and operations capabilities are necessary to accommodate EV growth and the corresponding charging activity. Integrating storage with EV chargers should also be explored as it has the potential to lower the overall load consumption of the charging site. Batteries can be discharged during times of high demand (during utility peak loading conditions) and recharged during off-peak times. Using a storage system with EV chargers may also help utilities to avoid the need to build additional infrastructure required to the additional load from the EV charging location. Energy storage can reduce the site loading, requiring a smaller export of power from the utility.

13. How can the State best encourage research and development of new technologies?

Response: Utility pilot programs or demonstration projects can test the integration of third-party clean energy technologies and markets. Such pilot and demonstration projects can help address technical and process issues and are aimed at delivering results that are actionable and verifiable. Pilot and demonstration projects can test new technologies and business models, as well as measure customers' response to and satisfaction with various clean energy products. Consequently, pilots and demonstration projects can also assist with the incorporation of cost-effective clean energy technologies into utility planning and operations processes.

14. How could new technology impact infrastructure investment?

Response: Please see the Company's response to Questions 12 and 13 above.

Infrastructure Investment

15. What infrastructure investments, policies, and procedures are needed to support the future of clean transportation in the state? What infrastructure needs will the state have in the promotion of clean and alternative fuel vehicles?

Response: Current levels of EV adoption are not sufficient to drive private investment in public charging infrastructure. Policies supportive of private investment in charging infrastructure at this early stage of the EV market are needed to overcome the chicken-and-egg problem of developing infrastructure in advance of the market. Utilities can help to fill this gap by developing charging infrastructure in advance of adoption rates needed to make commercial charging cost-effective. Public charging infrastructure is important to providing consumers the confidence needed to transition to clean energy vehicles such as EVs. In addition, EV supportive electric rates structures are key to providing electric customers control over their energy use and charging behaviors.

16. What clean transportation funding mechanisms should the state explore? What type of financial planning and programming should be considered?

Response: The Company supports leveraging various funding mechanisms to support the development of EV infrastructure and investments while minimizing the cost impact to customers. The State should establish mechanisms to enable EV access to all customer classes while minimizing the cost impact to all.

17. What incentives can New Jersey explore to encourage the transition to clean transportation?

Response: Incentives such as vehicle rebates, tax credits and other mechanisms should be considered as a means to drive the development of the EV market while in its early stages before EV adoption becomes self-sustainable. Other programs, such as outreach and education efforts, have also been shown to be highly effective at driving EV adoption and should be equally considered.

Reliability and Security

18. What is the effect of increasing alternative fuel vehicle adoption on energy generation and the utility distribution system? What role should utilities play?

Response: Increased EV adoption will require focused coordination between the State, commercial charging infrastructure providers, vehicle manufacturers, and electric utilities. Utility customer load profiles are expected to shift as more vehicles are charged at home in the evenings and at workplaces during the day. Fleet vehicles that charge at depots during the day will have significant impacts on system peak. Utilities will play a significant role in ensuring the distribution system is equipped to handle these changes.

In addition, utilities are well-positioned to encourage development of transportation electrification through the ownership of public charging infrastructure while the market is still in its infancy. Utilities are well-suited to develop electric infrastructure and do not share the same challenges facing commercial providers with respect to financing and cost recovery at low levels of usage. Lastly, utilities will be key in ensuring public access to electric vehicle charging infrastructure in low-to-moderate income communities where the business case may not exist for commercial charging.

19. How can clean transportation systems assist in assuring enhanced energy security, reliability, and resiliency?

Response: Clean transportation can help reduce dependence on external sources of energy, such as oil and gasoline, adding to U.S. energy security. In the future, electric system reliability and resiliency will be enhanced due to the number of electric vehicles interconnected with the grid; each EV will, in fact, act as a mobile energy storage system and through vehicle-to-grid (V2G) applications will have the potential to provide a variety of services back to the power grid whether as a single vehicle providing backup power to a home or as an aggregation of EVs acting like a virtual power plant serving the grid in times of system need.

20. What strategies can NJ TRANSIT develop (infrastructure, facilities, vehicles, labor, workforce, training, etc.) to implement clean transportation (buses, paratransit and rail) by 2030 and 2050 while maintaining reliability?

Response: Electrifying NJ TRANSIT (buses, paratransit and rail) will reinforce the State's commitment towards clean energy transportation. This in turn will bolster the State's position on clean transportation as it will be "leading by example" to promote and implement clean energy. In addition, NJ TRANSIT can offer workforce training to develop the skilled workforce necessary to deploy, operate and maintain electrified mass transportation infrastructure, facilities and vehicles.

Economic Growth and Workforce Development

21. What new industries will be needed to meet clean transportation goals? What new jobs and training will be needed to meet the demands of these industries?

Response: Meeting clean transportation goals will require a level of coordination between the automotive and electric power industry that has not been seen before. Clean transportation will cause a shift in the fueling infrastructure needed to support electric vehicles which will have an impact on how utilities plan for and operate the electric grid. Training offered by universities, trade schools and other organizations will develop the skill set needed by a workforce that will support development of EV and chargers, as well as those needed to operate and maintain the EV sector.

22. What is the impact of changes in transportation on the mobility of the workforce?

Response: Clean transportation, and in particular transportation automation, will likely have significant impacts on the mobility of the state's workforce.
The electrification of public transportation fleets will have important health benefits for all workers and, in particular, those reliant on public transportation to and from the workplace.

23. How does the state encourage innovation startups in this sector?

Response: Innovation in the area of clean transportation is essential to the electrification of the transportation sector and in meeting the State's clean energy goals. Creating a market for EVs by kickstarting the widespread deployment of DCFCs through utility ownership will encourage innovation and entrepreneurs in this sector. This will help to overcome the chicken-and-egg concern of owning an EV with nowhere to charge it, and vice versa. Innovation is needed not just in clean energy vehicles, but also in the charging infrastructure and payments systems that are necessary to drive EV adoption.

24. What are possible public-private partnerships in transportation innovation and what do they look like?

Response: Public fleet transportation electrification opportunities represent one of the largest opportunities to transform the transportation infrastructure to clean energy. Partnerships between state agencies and private sector vehicle manufacturers and charging infrastructure developers is essential for demonstrating the effectiveness of electric transportation and driving customer adoption of clean transportation alternatives.

Environmental Justice

25. What strategies could be implemented to allow for disproportionately impacted communities to have access to clean transportation options?

Response: As mentioned previously, the Company believes that utilities play a key role in the development of the EV market through the deployment of public charging infrastructure while the market is still maturing. This is even more important to disproportionately impacted communities in which the business case for commercial charging infrastructure may not be significant enough to spur investment – particularly in the early days of market development

Utilities are well-positioned to develop charging infrastructure in LMI and other underserved communities because of the utilities' access to lower cost capital and alternative methods of investment recovery. Commercial enterprises are dependent on high utilization of their EV chargers to offset their costs and recoup investments and thus are unlikely to invest in areas where usage may be low. Allowing utilities to recover the costs of investments made in electric vehicle infrastructure regardless of utilization rates makes them the ideal choice for areas of low utilization.

26. What efforts are most successful towards making clean energy measures and zero emission vehicles affordable and accessible to all?

Response: The Company supports equal access to clean transportation opportunities. Utility investment will ensure that EV chargers are deployed in low to moderate income communities to enable the communities' access to the EV chargers.

27. How can the state play a role in ensuring that disproportionately impacted communities receive opportunities and benefits connected to the clean energy economy and expansion of low and zero emission vehicles?

Response: As expressed above, the Company believes that utility development of public charging infrastructure, particularly while the market is in its early stages, is one way to ensure that disproportionately impacted communities have access to similar opportunities and benefits as other communities.

The Company also believes that the electrification of public transportation fleets can have a significant impact on, and bring the benefits of transportation electrification to, those communities and residents that would not otherwise have access to electric vehicles, especially given that currently EV's are priced higher than comparable internal combustion engine (ICE) vehicles.

Attachment D – Building a Modern Grid

Building a Modern Grid

Modernizing the electric grid is fundamental to the safe, reliable, and cost-effective operation of the Company's electric delivery system. As distributed energy resources (DER) proliferate in New Jersey, managing these resources will become important and significant to maintain the proper operation of the electric delivery system and establish the foundation for future markets. The requirements, opportunities, impacts, and challenges generated by DERs will grow. Establishing the appropriate level of monitoring and control will be critical to realizing the optimal value to customers and the electric delivery system from DERs while maintaining a safe and reliable grid. Technologies and equipment that facilitate greater customer engagement regarding energy usage and the underlying systems, data management, and analytics that facilitate situational awareness, asset management, contingency and risk analysis, outage management, and restoration will be core investments which will underpin the reliability, resiliency and efficiency of tomorrow's grid.

Investments in Grid Modernization are and will be foundational, investments that support the state's clean energy goals whether directly or indirectly linked with investments made for the express purpose of integrating DERs. These investments enable the dynamic grid of the future that will allow increased system transparency, operability, safety, resiliency and efficiency – goals common that align to the New Jersey state goals. RECO has been and is committed to continue making the foundational investments that will allow the grid to adapt to handle the evolving needs of the system to facilitate grid modernization, and the development of investments to handle potential future markets.

General

1. What does a modern grid look like in 2030 and 2050? What are the timeframes and pathways to achieve that?

Response: A modern grid must be adaptable to the changing requirements of all interconnected resources – it enables two-way power flow, the seamless integration of multiple types of DER, has advanced monitoring and control capabilities, and animates the market for customers and third party developers while ensuring high standards of safety and reliability. To transform the current system into a modern grid, utilities must deploy foundational investments enabling grid capabilities that provide and/or support applications that increase reliability, resiliency, safety, and enhanced situational awareness. These investments include advanced technologies, communications and equipment, such as robust sensing and measurement, actionable equipment and devices, and critical new back office systems that will enable enhanced information management, data management and analytics. Foundational investments can and will support both current applications and future applications to further enable the integration and utilization of DERs.

2. What is the most critical step to modernize the grid? What barriers exist to prevent state implementation of a modern grid?

Response: The most critical step is the adoption of state policies which enable the integration of clean power at affordable rates for all consumers. Such policies must include support for utility grid modernization investments that aim to improve the reliability, resiliency, efficiency, and automation of

the transmission and distribution (T&D) system. These investments at a high level will include automation and smart grid type investments, and system hardening and resiliency investments. More specifically, it will include actionable equipment and devices, robust sensors, data, and communications networks that enable enhanced visibility and understanding of the behavior of the electric delivery system; technologies and equipment that facilitate greater customer engagement regarding energy usage; and the underlying systems, data management and analytics that facilitate situational awareness, asset management, contingency and risk analysis, outage management and restoration. An Advanced Distribution Management System (ADMS) is an essential example of an enabling technology and is discussed in more detail in the Company's response to Question 5 below.

Barriers that prevent implementation of a modern grid include the loss of local tax revenues due to premature closing of current generation facilities, the issues and costs surrounding stranded assets, state policies and funding mechanism that do not standardize interconnection processes in an affordable manner, uncertainty regarding utility participation in clean energy programs, and the development of innovative rates and tariffs that enable DER development while securing the utility's financial position.

A potential key barrier that should be considered for modification is the current ratemaking process in New Jersey. To better facilitate long-term planning and investment strategies, the ratemaking process should be more proactive and future-looking.

3. How does a modern grid address, adapt, or respond to climate change and its impacts on New Jersey?

Response: Integrating clean energy technologies with the utility's electric grid will contribute to the State's goal to positively impact climate change efforts in New Jersey. A modern grid needs to be flexible to adapt to the integration of new clean technologies that reduce the impact of climate change in New Jersey. Making the foundational investments listed in the Company's response to Question 2 above, will support the increased and ongoing need for situational awareness and control to integrate clean energy technologies into the grid. Establishing the appropriate level of visibility, monitoring and control is critical to realizing resource optimization of the grid and gaining the highest value from interconnected clean energy technologies. At the same time, a modern grid must provide resiliency and reliability, as well as security through fuel diversity.

Climate change may be producing more intense weather events on a more frequent basis. To more appropriately address this, additional investments in storm hardening and system resiliency measures and solutions must be implemented as part of a long-term strategy to improving system performance and lessening system and customer impacts. This is discussed more in the Company's responses to the "Sustainable and Resilient Infrastructure" question responses.

A modern grid also assists customers to make a positive impact on climate change by enabling them to engage and participate in their energy use decisions. Further, a modern grid should be flexible to the varying operating needs of the electric system and communities it serves, while bringing benefits and affordable energy to all economic and demographic customer classes.

4. How does the state plan for fuel diversity and renewable energy within a modern grid?

Response: The State's goals for 100 percent clean energy technologies by 2050 will need to rely on fuel diversity, new renewable energy technologies, and other demand side measures to provide resiliency, reliability and security of the energy system. To the extent existing assets represent fuel diversity, operational flexibility during periods when clean energy is unavailable, and additional bulk power and ancillary services (i.e., regulation and frequency control) they should be preserved and left operational to provide system resiliency.

Fuel diversity will also allow customers to manage their energy usage by owning and/or deploying clean energy technologies. Utility investments to manage successfully the ongoing integration of clean energy resources into the modern and adaptable grid will support this need for diversity. Examples of the core investments needed to modernize the grid are found in the Company's responses to Questions 2 and 3 above.

The retention of nuclear and clean gas fired fossil generation with remaining useful life is a lower cost alternative to fuel diversity than retiring these assets early and creating stranded assets. In addition, to encourage more cost effective bulk power upgrades, the State should support the transfer of renewable energy between regions and States. Offshore wind is an example where developing regional projects (rather than individual) may help avoid suboptimal system development, higher project risk for developers, and higher costs for customers.

5. What integrated distribution planning is needed in a modern grid?

Response: The electric delivery system planning process is designed to maintain and enhance the safety and reliability of the T&D system while maintaining system performance within defined and acceptable design and operating risk tolerances. The planning process evaluates the electric delivery system over a specified future forecast period and identifies system needs and potential / recommended solutions.

Integrated planning enhances the traditional distribution planning process by exploring various options to facilitate consideration of clean technology resources and other alternative solutions to traditional infrastructure as part of its forecasting, planning and capital budgeting process. Integrated planning supports the increased resiliency and reliability of the electric delivery system, while providing opportunities for customers and third parties to engage with and support a diversified fuel mix and to participate in their energy future. The development of appropriate analytical methodologies and tools, collection and sharing of planning data and development of an integrated T&D planning process supports the integration of clean energy resources into the electric delivery system. A key element of such enhanced distribution planning will be the ability of utilities to forecast, at a more granular and location-based level, the availability and operating characteristics of load modifiers and clean energy resources. This will require enhanced scenario and probability analysis that recognizes both high- and low-levels of clean energy penetration integrated with various utility load growth scenarios to enable the utility to understand the impact on local system reliability and system requirements.

RECO has already modified its annual and long-term integrated planning and forecasting processes to account for the growth of these clean energy resources and other load modifiers into its electric delivery system. The Company has, and will continue to expand as necessary, the list of load modifiers from demand side management programs, such as demand response and energy efficiency (EE), to include along with distributed generation, combined heat and power, solar, electric vehicles, and energy storage. RECO is incorporating more granular methods of forecasting load modifiers and clean energy resources, from both a locational and temporal perspective; this will be further facilitated and enhanced

by the grid modernization investments described in the Company's responses to Questions 1 and 2 above. RECO is in the process of deploying an ADMS that will aid in DER forecasting. As mentioned above, RECO has taken the initial necessary steps to integrate load modifiers and clean energy resources into its integrated planning, forecasting and capital budgeting processes. RECO currently is capable of investigating if major capital infrastructure investments can be substantially deferred, reprioritized, or even eliminated by alternative and less costly traditional infrastructure investments, as well as targeted non-traditional measures and alternative solutions, such as distributed generation (DG), energy storage, demand response, energy efficiency, or a targeted portfolio of these. Further, RECO recently expanded its annual forecasting horizon to ten years, which will enable the Company to analyze and develop potential alternative solutions in a more efficient and timely manner that could achieve the load reduction needed in a particular area. Where such non-traditional alternatives and measures may be cost-effective to defer or eliminate traditional infrastructure investments, ratemaking should be modified to consider appropriate cost-recovery of these potential alternative investment options.

6. In what ways can a modern grid meet the Global Warming Response Act 2050 greenhouse gas emissions reduction requirements and the Governor's goal of achieving 100% clean energy by 2050?

Response: Accomplishment of the State's goals for 100 percent clean energy by 2050 will rely on foundational utility investments to manage successfully the ongoing integration of clean energy resources into the modern and adaptable grid. Examples of the foundational investments needed to modernize the grid are found in the Company's responses to Questions 2 and 3 above.

State Policy

7. How can state policies support a modern grid to increase resiliency and reliability and fight climate change?

Response: State policies should enable the integration of clean power at affordable rates for all consumers. A modern grid is key to this effort. To facilitate the modern grid deployment, state policies should allow utilities to make foundational investments that will enable EDCs to evolve their current grid architecture into a modern grid as discussed in the Company's responses to Questions 1, 2 and 3 above.

State policies should support: 1) modification of the current ratemaking process in New Jersey to be more proactive and future-looking, to better facilitate long-term planning and investment strategies.; 2) innovative rate making and tariffs; and 3) appropriate treatment and cost-recovery for the potential deployment of alternative solutions to traditional capital expenditures with expedited recovery and fair rates of return. Incentives and cost recovery mechanisms for utilities to enable grid resilience and reliability, such as infrastructure investment plans (IIPs), should be encouraged and favorably received for such investments, as well for traditional and foundational investments that promote grid modernization, system hardening and resiliency. Positive revenue adjustments and alternative earning / revenue mechanisms for utilities to accelerate and drive the enablement of DER and grid resiliency should be considered and encouraged.

8. What regulations need to be updated with a modern grid? Should there be performance metrics tied to grid performance?

Response: Utilities should be able to recover costs associated with program offerings and lost revenues due to energy efficiency and integration of DER, including clean energy resources. In many states, there are recovery mechanisms that allow utilities to recover lost revenues resulting from energy efficiency programs and DER to remove the disincentive to implementing energy efficiency programs or interconnecting DER assets to utility systems.

Regulatory constructs should be developed so that utilities do not have an improper disincentive to invest in either traditional infrastructure or clean energy assets. Incentives and cost recovery mechanisms for utilities to enable grid resilience and reliability, such as the infrastructure surcharge, should be continued. Positive revenue adjustments and alternative earning / revenue mechanisms for utilities to accelerate and drive the enablement of DER and grid resilience should be considered.

9. Could regulated rate design and tariff structures be developed to implement the development of a modern grid? What are examples of these?

Response: Rate design and tariff structures can assist in the development of a modern grid. A variety of rates, such as time of use rates, could encourage customer behavior and the adoption of clean energy resources. Rate design needs to evolve as grid modernization takes shape. Tariff-based structures can be used to support the efficient use of such grid. However, the rate structure should be designed in a way that does not incent one technology over another, but rather incents customers to support all clean energy technologies. In addition, the Company's roll-out of AMI meters in the service territory can allow the Company to explore innovative rate designs to implement the development of the modern grid; potential examples include time of use, residential demand chargers, pre-pay options, and smart home rates.

10. What actions could the State take to manage energy costs while upgrading the grid? Within the regional transmission system, how does modernizing the grid have the potential to save ratepayers money?

Response: In addition to the numerous benefits discussed in these comments, an opportunity for great value resides with the ability of a particular energy technology and/or portfolio of resources to defer specific electric delivery system upgrades, and to do so with the same degree of necessary reliability and/or functionality afforded by traditional distribution investments.

Local transmission can be used to transfer clean energy from one region to another and alleviate the need to integrate additional clean energy resources when there is already available capacity. The ownership of new transmission assets should be evaluated for the least cost option to minimize costs to all customers including LMI. As an example, TO ownership of wet collector transmission system for off shore wind may be a cost-effective solution that should be evaluated.

11. How should the costs be allocated for grid upgrades and operation?

Response: The utility investments to modernize the grid should be itemized as capital expenditures, recovered through a rate filing or IIP, and borne by all customers, as these investments benefit all customers. For example, grid modernization technology and equipment that facilitate customer options regarding energy usage and alternatives, provides increased visibility and understanding of the behavior of the grid and as such benefit all customers. Operational and maintenance costs of any grid modernization asset likewise should be part of a traditional rate filing and/or IIP, and recovered from all

customers as these costs support the benefits from these investments on an ongoing basis. Likewise, costs that result in a direct benefit to a specific customer or class of customer should be borne by only those that benefit. In addition, DER interconnection costs should be borne by the developer and/or owner.

12. In a modernized grid, how should the interface between the energy distribution systems and the energy transmission systems work?

Response: In a modern grid, the interface between T&D systems must be approached and integrated from both engineering planning and system operations perspectives. From a planning perspective, the main goal of the integrated planning of the T&D systems has always been to maintain a reliable, safe and efficient delivery system. Future developments must include the continued refinement of the integrated T&D planning processes to incorporate greater amounts of DER's and new technologies such as changes in the planning process to increase the ability to identify capital projects for potential deferral or replacement with clean energy and other non-traditional measures.

In addition, long-term planning for T&D systems will benefit from expanding the planning horizon. The ability to identify longer-term trends to better anticipate load and DER trends will allow for more detailed area load growth forecast along with associated infrastructure requirements.

From an operations perspective, T&D systems have to be operated on a more integrated basis, as bi-directional flows and quickly changing operating parameters will require more situational awareness and wider capabilities for operational control across both levels of the system in near-real time. The close coordination of T&D systems can be accomplished by using platforms such as an Advanced Distribution Management System (ADMS) working in concert with the existing applications and software in the Transmission Control Center. In addition, a vast number of devices in the distribution, substation and transmission systems will provide actionable control to improve system reliability, operating parameters and conditions, and system efficiency. The system design of protection and control of all equipment in T&D systems will be vital to realize the expected future state as described above.

13. Should residential, commercial, or industrial customers of the energy distribution systems receive a benefit, incentive, or subsidy to fund upgrades to the grid? What types and level of incentive should this include or not? Should this include rate and tariff designs/structures? Should these incentives be limited to low and moderate-income households?

Response: Upgrades to the grid are beneficial to all classes of customers. Rather than offering specific incentives, rate design should be completed in such a way as to provide accurate price signals that cause customers who create costs to pay those costs. Proper price signals encourage the right behavior that will result in the lowest cost for society as a whole.

14. How do we address interdependencies between the energy distribution systems and other critically important environmental infrastructure such as water supply, wastewater treatment and waste management systems?

Response: RECO recognizes the interdependence between critical infrastructure, including other utilities in any plan for grid modernization. The integration of clean energy should be developed to promote the resiliency and reliability of these interdependent networks, and any system interfaces and coordination. To that end, these utility service locations offer unique opportunities to deploy DER grid

assets which will facilitate the state's clean energy policies while enhancing reliability and performance of these critical systems. RECO supports state policies that subsidize campus micro-grids, DER deployment and other financial incentives to enable this need, provided that the funding for those initiatives are developed through statewide programs and means, and / or recoverable as appropriate.

Technology

15. In what ways can a modern grid utilize new and developing technologies? How can this allow the affordable distribution of energy to all customer classes?

Response: Utilities, either alone or working with third party partners, can provide a cost-effective solution to a grid system needs by evaluating a variety of traditional and non-traditional solutions, thereby facilitating the affordable distribution of energy to all customer classes. Utility partnerships with third parties gained through a competitive procurement process should play a role in meeting the future needs of the electricity system. Utility pilot programs or research and development projects can test the integration of clean energy technologies and markets. Such pilot programs will help address technical and process issues and are aimed at delivering results that are actionable and verifiable. These pilot programs should test new technologies and business models, as well as measure customers' response to, and satisfaction with, various clean energy products. These pilot programs may also help with learning to incorporate such clean energy technology into utility planning and operational processes, and evaluate cost effective ways to integrate clean energy.

As an example, through the establishment of a dedicated laboratory environment, RECO is progressing advanced automation efforts and implementing impactful research and development projects that have and will continue to meet and solve grid challenges. This provides the Company an extensive and technically proficient environment with the capability to test new systems, equipment and end-to-end operational integration so that equipment and systems will operate as intended prior to mass deployment.

In addition, utility ownership of clean technology assets should be allowed as utilities are well positioned to understand the needs of the electric grid and the beneficial locations for integration of clean energy technology. Utilities, either alone or working with a third-party provider, can leverage their existing knowledge of the electric grid for a smooth and timely transition to clean technology deployment. Regardless of ownership, all clean energy should support the reliability and resiliency of the electric grid and provide benefits to all customers.

16. What technologies and measures can be adopted to make the energy distribution systems more efficient and reduce losses? How do these technologies assist in managing annual and peak load?

Response: As discussed in more detail in the responses to Questions 1, 2 and 3 above, the development and implementation of an ADMS, in concert with the deployment of automation equipment, actionable devices, sensors and monitoring and control technology, AMI, and other key back office systems and the integration of these systems will provide more granular detailed data on the system's operation, in near real-time, giving operators more visibility into the grid. This improved visibility and functionality provided by the implementation and integration of these systems will allow for significantly improved system reliability and resiliency, and more efficient system operation resulting in reduced system losses.

In addition, as more DER technologies are integrated in the distribution system, losses may be reduced due to the proximity of distributed generation to load. Some DER technologies such as energy storage and demand response are dispatchable and can assist in managing the utility's peak load while other DER technologies, such as EE, provide load relief throughout the year. Overall, a portfolio approach to integrating DERs will support a more efficient and reliable energy delivery system.

17. What is the role of advanced meter infrastructure, IoT, and data analytics in the modern grid? How can technology assist in two-way communication, trouble shooting and overall grid management? What changes in operating protocols and grid designs will be needed to handle the two-way flow of power?

Response: RECO is in the process of rolling out its BPU-approved AMI program, consisting of the installation of AMI communications infrastructure and the deployment of electric smart meters. In addition, the Company, along with its New York affiliates, has deployed key technologies needed to fully enable the functions and features of the AMI system such as the AMI Head-End System, Meter Asset Management System, Meter Data Management System, a meter installation system, as well as changes to its customer information system. These technology investments support the meter deployment, billing, and numerous customer engagement and operational efforts.

AMI provides a foundation of information and communications capabilities that will enable the Company's customers to become informed and engaged energy consumers. With the appropriate data systems and web presentment in place, customers will have the opportunity to leverage the interval meter data made available by AMI to evaluate their energy consumption, make informed energy decisions, and help the environment. For example, a customer's energy consumption patterns might indicate that the customer would benefit by replacing an aging refrigerator or by installing a battery or solar array. Customers will have access to tools and automation that will allow them to set thresholds on usage amounts thereby triggering alerts vie email and texts. Once notified, a customer will then be well positioned to proactively adjust their usage, rather than being unaware or reacting after receiving their monthly bill.

Accurate measurement of the energy supplied by DERs is needed to support the connection and use of DERs. RECO's AMI infrastructure (meters and communication network) enables bi-directional energy measurement and retrieval of measurement data from the DER device(s) and associated equipment. The granularity of usage data and the speed by which that data is made available is an AMI capability that will help the Company more quickly understand the impacts of integrating DERs into RECO's electric delivery system and operations. The two-way communications infrastructure necessary for AMI deployment could potentially be leveraged to enable the increased utilization and improved management of DERs within RECO's service territory by allowing expanded monitoring and control capabilities as ADMS and DERMS systems are developed.

The AMI communications network and AMI meters deployed through this project are supplying near real-time energy consumption providing 15-minute usage data, and will provide the foundation for implementing several of New Jersey's energy goals. AMI will help with these goals by improving visibility of system operating parameters, enhancing control decisions, and supporting advanced analytics.

The planned AMI system will also facilitate reductions of greenhouse gas emissions through advising Volt-Var Optimization (VVO) programs that will be administered through the ADMS application; by

facilitating consumer behavior changes (e.g., expanded Demand Response Programs); and, by reducing vehicle emissions resulting from significantly reduced vehicle miles for its meter reading and operations fleets.

Data analytics tools, models, and resources will enable a utility to leverage the vast amount of data that will be generated from the advancement of automation and grid modernization, including AMI, and will provide significant opportunities to improve how the utility operates and how customers manage their energy usage. In addition, the granular data provided by AMI will support clean energy technology developers to plan and integrate their resources, for example by using more accurate load shapes generated from the granular data.

18. Who should manage and oversee access to advance meter infrastructure data? Who should own the data?

Response: The utility should manage and oversee access to advance meter infrastructure data by implementing rules and privacy standards established by the BPU for access to customer data. Customer consent to the dissemination of customer-specific information to third parties is essential to maintaining customers' trust. Working with the BPU, the utilities can establish standards that improve access to customer data, both customer-specific data and aggregated data. Utilities currently provide data to third parties through a variety of methods, including Electronic Data Interchange. In addition, RECO offers Green Button Download to its customers, enabling the customer to obtain and analyze up to 13 months of energy usage data in a simple spreadsheet. This data can be shared by the customer with third parties. RECO, along with its New York affiliates, is in the process of making Green Button Connect available to all its customers.

19. What advanced distribution monitoring or distribution monitoring systems should be in place to manage and control the energy distribution systems?

Response: The Company is continuing to upgrade its communications infrastructure, and distribution/substation automation to prepare for its ADMS installation, which is scheduled to commence in early 2019. An ADMS is critical to realize the functionality necessary to manage and control an advanced modern grid to proactively control assets and modify in near real-time operational states to improve reliability, resiliency and system efficiency, and to effectively maintain a safe and reliable modern grid. Such a system must integrate the following systems and/or sources of data: SCADA and DSCADA; GIS with customer and asset connectivity; customer information system, Distributed Energy Resource Management System; outage management system, engineering analysis system; and expanded and comprehensive smart grid and automation equipment/device functionality. An ADMS system is a central platform that will enable the utility to accommodate and act upon additional monitoring and control capability of localized DER assets, to better position utilities to enable greater penetration of clean energy resources. It will also enable utilities to optimally leverage these local DERs for electric delivery system needs. An ADMS will enable functionalities such as VVO to improve operating states and system efficiency, and Fault Location Isolation and Service Restoration (FLISR) to facilitate significantly improves system and customer reliability and resiliency and improve restoration by reducing substantially the number of customers experiencing longer-term outages. The Company has completed an ADMS scoping study prior to deployment, which determined that the Company could expect significant operational efficiencies in grid optimization through its implementation.

20. What are the current technological advancements for natural gas leak detection and how often should the natural gas distribution system be reviewed for leaks? Should specific methods for leak detection and mitigation measures be mandated?

Response: RECO does not operate a gas system in New Jersey, and therefore offers no response for this question.

Security

21. What cyber security policies, strategies, and procedures should be incorporated into plans to build out a modern grid?

Response: Cybersecurity and the prevention of security breaches and cyber events are essential responsibilities and priorities for utilities. A common and comprehensive approach to managing cybersecurity risks in the evolving modern grid environment must focus on people, processes, and technology and is crucial to maintain security. Implementation of an industry-approved risk management methodology and alignment of control implementations with recognized and accepted industry standards, such NIST standards, are essential. The cybersecurity industry continues to evolve, as does technology. The trend is for former best practices to become essential components of a cybersecurity program over time. Cyber insurance is considered essential, with the question being how much cyber insurance coverage is sufficient. The same is true for technology – multi-factor authentication used to be voluntary protection, and now it is considered a baseline requirement.

22. What are the security risks of expanding distributed energy resources, variable energy resources, smart grid and advanced meters? How can they be mitigated?

Response: There are cyber risks associated with the interconnection of distributed energy resources on the grid, these risks include loss or misuse of information and malware introduced to utility systems. Policies and strategies discussed in the response to Question 21 are some ways to mitigate these risks. To protect systems and detect potential vulnerabilities utilities can perform internal risk assessments. Industry working groups can also provide information and details on current security trends, counter measures as it related to these threats.

The basic infrastructure that is deployed around RECO's current Smart Meter program is the smart meter, communication devices and software/hardware at the utility. Currently, these devices only pass granular information, i.e., 15-minute intervals, related to the customer's total usage consumed at the premise. No data about customer devices or appliances in the location nor how much energy each consumed is measured, passed along, or made available to anyone, including the customer.

23. What role can the State play in providing physical and cyber security for the modern grid?

Response: The State is concerned about cyber issues and has laws in place to address cyber. That being said, contractual provisions, which could include Cyber and Data Security Agreements, are needed. In addition, the State should require that DER providers adhere to the cybersecurity guidelines as set forth in the interconnection requirements.

Economic Growth and Workforce Development

24. What workforce training and jobs will be needed to support the development of the modern grid?

Response: Workforce development is critical to the utilities as well as developers and other third parties. All parties, including utilities, will need the appropriate level of staffing with proper skill sets to integrate and maintain clean energy technologies effectively to the distribution system.

The transformation of utilities to incorporate and manage an increase in clean energy will undoubtedly impact the people, processes, technologies and organizations throughout the companies. Proper training as well as governance will be critical to a successful transformation. An increased skill set will be required of both field and office workers to engineer, build, operate and maintain the modern grid. In the near-term, utilities may require the expanded use of consultants to supplement the utility's evolving expertise and supply resources that provide an elevated level of knowledge and experience not currently available internally. Utilities will also need to look to other states or outside of the Country to identify and benchmark industry best practices and perspective on developments and practices across the industry from other leading utilities.

25. What new or existing industries in the grid modernization field could be developed or brought to the State?

Response: New Jersey should support and incent the specialized training and education that will be required to develop and maintain a modern electric grid. Encouraging the development of programs at both universities and technical schools would produce a skilled workforce that can meet the needs of an evolving electric industry.

Environmental Justice

26. How could modernizing the grid address the needs of disparately impacted communities and low and moderate income (LMI) families/communities?

Response: RECO supports access to safe, reliable and resilient energy for all communities. Modernizing the grid to include AMI will provide LMI families and communities with more granular level data about their usage which they can use to modify behaviors that may lower their energy bill. In addition, as discussed above, this granular data can be used by clean energy resource developers to understand the needs of and the potential benefits to interconnecting particular communities on the grid.

Properly cited DER in critical mass could offer employment opportunities, enhance the tax base, and provide living laboratories for students to learn STEM education. Grid modernization must be done in an affordable manner so as to not increase the percent of disposable income spent on energy services.

27. What changes to retail rate structures and regulatory pathways are necessary to help activate and engage energy efficiency (EE) distributed energy resources and variable renewable energy resources to lower electricity costs?

Response: Programs could be designed to target LMI customers in disparately impacted communities, thereby providing residual benefits to all customers in the targeted area. Utilities can implement energy efficiency and peak demand reduction strategies to provide permanent demand reductions to increase reliability and resiliency in targeted areas of the system.

28. What are the current barriers to the distribution of affordable renewable energy to all customer classes?

Response: There are various barriers to the distribution of affordable energy, i.e., technological, policy, financial. The Company has tried to identify and address those barriers in its responses to the Board's questions.

29. In building a modern grid, what are policies that could limit barriers to participation by disparately impacted communities?

Response: LMI customers can be supported by leveraging programs such as direct install, community distributed generation opportunities and other subsidized programs. LMI programs could be designed to target these areas to provide benefits to all customers.

30. How can the State play a role in ensuring that disproportionately impacted communities receive opportunities and benefits connected to modernizing the grid?

Response: The State should support utility run energy efficiency, peak demand reduction, and demand response programs that can assist in keeping energy affordable for all customer classes since lower implementation costs can be achieved.

For example, RECO's low income direct install program operates at a lower $/MWh than the State-run Comfort Partners program and has treated over 80% of RECO's Universal Service Fund customers. This high participation rate is a direct result of the relationship that utilities have with customers as their trusted energy advisor. Utilities should have the flexibility to implement programs based on program experience in other jurisdictions and synergy savings can be realized by offering similar programs where similar customer demographics exist. In addition, energy efficiency, peak demand reduction, and demand response programs have proven to be least cost solutions to potentially defer utility capital investments in constrained areas in need of infrastructure upgrades on the T&D system.

Attachment E – Sustainable and Resilient Infrastructure

Sustainable and Resilient Infrastructure

Sustainable and resilient infrastructure comprises the backbone of the electric delivery system. However, recent trends are changing the traditional thought process pertaining to utilities system resiliency. The power grid, originally based on one-way flow of electricity, is evolving into a more complex, smart, two-way electric grid with the goal of becoming a cleaner, more resilient system. Technologies such as energy storage and Advanced Distribution Management Systems (ADMS) and Advanced Metering Infrastructure (AMI) will be essential to managing these two-way flows and provide customers with a level of service they have come to expect.

ADMS improve situational awareness of the grid through enhanced monitoring and control technology, which will allow for improved reliability, resiliency and system efficiency. Energy storage can be a critical element of a more resilient and efficient energy system. AMI can provide meter-level outage information following a storm, allowing service restoration efforts to be focused and directed. Energy Storage can provide a wide range of services whether as a generation, distribution, or customer-sited resource. Energy storage is an enabling technology critical to supporting many of New Jersey's energy goals.

General

1. What infrastructure is necessary to meet the EMP's goals of, among other things, affordable, resilient, clean energy? Do these inter-related EMP goals require the construction of new infrastructure or the upgrade of existing infrastructure in the state, or both?

Response: In order to provide affordable, resilient and clean energy, a modern grid is essential. A modern grid must be adaptable to the changing needs of the interconnected resources as well as the utility's needs to successfully interact with third party resources, consistent with the utility's statutory requirement to provide safe and reliable service.

To transform the current system into a modern grid, the utilities should rely on the deployment of foundational investments enabling grid capabilities that provide and/or support applications that increase reliability, resiliency, safety, and enhanced situational awareness and operational flexibility through advanced technology and equipment including robust sensing and measurement, information management, data management and analytics and communications networking capabilities.

Foundational investments can support both current applications and future applications, such as integration and use of DERs, in a modular fashion. The utilities may leverage the foundational elements to inform the evolution of their operating and planning philosophy, but at the same time maintaining their core operating philosophy, i.e., sustaining a reliable, resilient and safe power system that enables operational flexibility.

It should be stressed that while investment in new systems, automation technology and platform integrations will enable and advance a modern and sustainable grid, investments in core transmission and distribution infrastructure will still be necessary and critical to establish and maintain a solid foundation to enable the appropriate expansion and modernization of these new systems and technologies.

2. What are pathways forward to ensure New Jersey has secure, modern, and resilient infrastructure by 2030? By 2050?

Response: As discussed in the Company's response to Question 1 above, continuation of core infrastructure investments, as well as investments in new systems, automation and DER technologies and programs are all crucial steps forward on the pathway to New Jersey's secure, modern and resilient infrastructure.

3. What is the role of restructuring and competitive markets on infrastructure and energy needs?

Response: Markets play an important role in meeting energy needs. The restructuring and evolution of competitive markets should be an iterative process that will evolve over many years and requires investments in infrastructure, systems, and workforce in order to effectively integrate DER that supports robust markets.

Utility partnerships with third parties gained through a competitive procurement process should play a role in meeting the future needs of the electricity system. Utility pilot projects can test the integration of clean energy technologies and markets. Such pilot projects will help address technical and process issues and are aimed at delivering results that are actionable and verifiable. These pilot projects should test new technologies and business models, as well as measure customers' response to and satisfaction with various clean energy products. They may also help to incorporate such clean energy technology into utility planning and operational processes and must seek to evaluate cost effective ways to integrate clean energy. Analysis of the results will help determine the best methods and business models to allow all customer classes to benefit from clean energy technologies in a cost-effective manner.

In addition, utility ownership of clean technology assets is essential, as the EDCs are well positioned to understand the needs of the electric grid, target the most beneficial locations for the integration of clean energy technologies, and promote and accelerate the integration of these technologies on the grid. Utilities, either alone or working with third-party providers, can leverage their existing knowledge of the electric grid for a smooth transition to clean technology deployment. Utilities can also help to facilitate timely deployment of these clean technology assets. Regardless of ownership, all clean energy should support the reliability and resiliency of the electric grid and provide benefits to all customers.

4. How does New Jersey's location between two grids, PJM and NYISO, impact our future goals and reliability?

Response: The geographic boundary between PJM and NYISO should not negatively impact the reliability of the electric system. RECO is unique in that it is part of its parent company's (Orange and Rockland Utilities, Inc. or O&R) system (the O&R System) which is planned for as an integrated system and operates in both PJM and NYISO. Although the NYISO's and PJM's distinct regional planning processes apply to their respective areas, O&R's local planning transmission design standards are applied uniformly to both systems, thus preventing costly duplication of system upgrades and maintaining the O&R System in an efficient and cost-effective manner.

It is important to note that RECO participates in both grids – its eastern territory is part of PJM and its western territory is part of NYISO. RECO must conform to and employ the rules from both. To the extent different rules are developed, either for interconnection or for generation of revenue by a clean energy technology for capacity and energy, it will be important that technologies abide by these rules, recognizing the potential for different outcomes for the same technology deployed on different grids. To that extent, coordination between the ISO's should be advocated for, to minimize the creation of distinctly separate and divergent philosophies for market participation, ancillary services and participation requirements.

5. How does New Jersey's membership in PJM affect its ability to meet the 2030 and 2050 goals?

Response: RECO offers no response at this time.

6. What steps are needed to preserve the integrity of our energy systems in the face of future acts of nature (storms, hurricanes, wind, etc.)?

Response: Additional system hardening and resiliency investments are needed, and programs that seek to accelerate these investments should be embraced to enable this type of improved performance from our electric delivery systems. Investments such as storm hardening, automation, and smart grid are foundational to ensure that utilities are providing the appropriate modifications to the electric delivery systems to improve their performance in the face of future significant weather events, while meeting their statutory obligation to provide safe and reliable service to their customers. Investments in the aging electric delivery system with newer designs that are more resilient and robust will provide benefits to all customers.

State Policy

7. What technological changes need to be adopted to ensure continued sustainable and resilient infrastructure? How should the cost of this technological infrastructure be allocated?

Response: Utility grid modernization investments should aim to improve the reliability, resiliency, efficiency, and automation of the transmission and distribution system, many of which have been discussed in the answers to questions one through six above. Such investments will include sensors, automation equipment, communications networks and back office systems that will process robust near-real time data and enable enhanced visibility, operational understanding, and control of the electric delivery system. These underlying systems, data management and analytics will facilitate improved situational awareness, asset management, contingency and risk analysis, outage management and system restoration. This also includes technologies and equipment that will facilitate greater customer engagement regarding energy usage and alternatives. These necessary core investments underpin the required focus on grid reliability and resiliency, provide the basis for increased operational flexibility, and enable efforts toward achieving the New Jersey policy goals, including the integration of various types of distributed energy resources and clean energy programs and technologies.

An ADMS is the foundational platform that should be developed and integrated with other real-time systems and data sources, such as a utility's geographic information system, customer information system, emergency management system, and SCADA systems, in order to advance modern grid

performance through fast system reconfigurations and operating states to improve system reliability, restoration and system operating efficiency.

A utilities' cost of investments to modernize the grid should be itemized as capital expenditures, recovered through rate filings or other mechanisms such as infrastructure investment plans (IIP's), and borne by all customers as modernization of the grid benefits all customers. Operational and maintenance costs of any grid modernization asset likewise should be part of a traditional rate filing and recovered from all ratepayers as these costs support the benefits from these investments on an ongoing basis.

8. What is the role of the following in achieving 2030/2050 goals: decoupling; advanced metering infrastructure (AMI); distributed energy resources (DER); and micro grids? If previously answered in another stakeholder group, please cite which one.

Response: As to decoupling, utilities should be able to recover costs associated with program offerings and lost revenues. In many states, there are recovery mechanisms that allow utilities to recover lost revenues resulting from energy efficiency programs and DER in order to remove the utilities disincentive to implementing energy efficiency programs or interconnecting those assets to utility systems.

As to AMI, RECO is in the process of implementing its BPU-approved AMI program, consisting of the installation of AMI communications infrastructure and the deployment of electric smart meters. Along with producing tangible operational benefits, the AMI program will drive improvements in the convenience, speed, and quality of the services that the Company provides to all of its customers both during routine business activities and during outage situations. AMI is critical to monitoring and control needed by the modern grid to manage clean energy resources safely, effectively, and efficiently by providing the granular data needed. For a more complete response, please see the Company's response to Question 17 in the 'Building a Modern Grid' section.

As to DER, it will serve a critical role in achieving the State's goals to have 50 percent of the kilowatt hours sold in the State by 2030 be from Class I renewable energy sources and 100 percent of the State's energy production profile from clean energy technology by 2050. DER integration into the electric delivery system requires investments in a modern grid as answered in the questions above. Regardless of the technology type, size, ownership structure or other attributes, DER must support the utility's statutory obligation to provide safe and reliable service to its customers.

As to micro-grids, they are mechanisms that may supports the reliability and resiliency of an electric grid while using a variety of resources, e.g., energy storage, CHP and back-up generation. Coupling DER, EE and advances in clean energy technology will support the goals, however, the BPU should not allow a utilities' overall customer base to incur undue costs for this infrastructure for individual customer or campus application resiliency purposes. Funding for utility installation of microgrids should be considered and allowed within a portfolio of capital projects via the rate case process or through specific IIPs.

9. Are the regulatory constructs currently in place to assure reliability, security, and resiliency of infrastructure adequate to meet the EMP's goals? If not, what steps can the state take to address the inadequacies?

Response: One of several regulatory constructs that should be in place to assure reliability, security and resiliency of infrastructure is the appropriate security agreements with third parties that own and / or have access to grid resources. Standardized Cyber and Data Security Agreements should be executed by third parties interacting with the utility's systems to ensure that third parties have the wherewithal to interact securely and safely with a utility's systems, protect customer and company data, and not jeopardize the utility's systems. In addition, to maintain reliability and resiliency, utilities should have the ability to impose performance payments and / or penalties on non-performing resources that are procured to defer or eliminate traditional utility infrastructure.

With respect to improving regulatory constructs and processes, the Company purports that a modification to the ratemaking process is needed to allow for future looking investments over a longer-term period than is presently allowed. This will enable with more surety the implementation of the types of modernization and resiliency investments being discussed in these responses, to be planned for and implemented as part of a long-term strategy to meet the states goals.

10. What potential stranded assets could be created with increased energy efficiency, distributed energy resources, and the move to 100% clean energy?

Response: The retention of nuclear and clean gas fired fossil generation with remaining useful life is a lower cost alternative to fuel diversity than retiring these assets early and creating stranded assets. Utilities have production and transmission assets in place operating at or better than environmental regulatory requirements. These assets are currently being paid for by ratepayers and to the extent these assets assist in bridging New Jersey to the next transformative period, their useful life should continue so as to facilitate the transition, avoid stranded assets and reduce cost impacts.

11. What changes are needed to assure reliability, security, and resiliency of infrastructure? How is that balanced with affordability for ratepayers?

Response: As discussed in many of the responses above, infrastructure investments are a crucial step forward to establishing and maintaining New Jersey's secure, modern and resilient energy grid. Such investments will provide benefits to all customers.

12. What level of coordination is required between state and national standards (i.e., RGGI, California Car, etc.) to meet the EMP's goal? What steps could be taken to coordinate standards?

Response: RECO offers no response at this time.

13. What else is needed for cybersecurity related to infrastructure? If additional resources are needed, describe software, hardware and human resource needs. Who should pay for it?

Response: Cybersecurity and the prevention of security breaches and cyber events are essential responsibilities and priorities for utilities. A common and comprehensive approach to managing cybersecurity risks in the evolving clean energy environment must focus on people, processes, and technology and is crucial to maintain security. Implementation of an industry-approved risk management methodology and alignment of control implementations with recognized and accepted industry standards, such as NIST standards, are essential. The cybersecurity industry continues to evolve, as does technology. The trend is for former best practices to become essential components of a

cybersecurity program over time. Cyber insurance is considered essential, with the question being how much cyber insurance coverage is sufficient. The same is true for technology – multi-factor authentication used to be voluntary protection, and now it is considered a baseline requirement.

Workforce Development

14. To maintain a reliable infrastructure, what are the workforce needs of today and tomorrow?

Response: The transformation of current utility operations to incorporate and manage an increase in clean energy will impact the people, processes, technologies and organizations throughout the companies. Proper training as well as governance will be critical to a successful transformation. An increased skill set will be required of both field and office workers to engineer, build, operate and maintain the modern grid. In the near-term, utilities may require the expanded use of consultants to supplement the utility's evolving expertise and supply resources that provide an elevated level of knowledge and experience not currently available internally. Utilities will also need to look to other states or outside of the Country to identify industry best practices and perspective on developments and practices across the industry from other leading utilities.

15. How will the workforce change as we move towards 2030? 2050? How does technology impact these changes?

Response: The workforce changes discussed in the Company's response to Question 14 must also keep pace with the changing technologies, both those used by the utility to modernize the grid and the clean energy resources that will be interconnected to and impact the grid.

16. What training and workforce development are needed to insure future workforce and energy infrastructure needs are met?

Response: Education and training, both at the collegiate and the technical school level, that is tailored to support the clean energy industry will support the continued employability of local workforce and provide utilities, developers and other third parties with the skilled labor force they require. Utility-run education programs can also support the education and training of a skilled labor force.

17. Is New Jersey at a competitive advantage or disadvantage to recruit these workers?

Response: New Jersey should support and incent the specialized training and education that will be required to develop and maintain a modern electric grid. Encouraging the development of programs at both universities and technical schools would create a skilled workforce that can meet the needs of an evolving electric industry.

18. What jobs and industry may be lost and how do we mitigate these losses?

Response: Existing fossil fuel infrastructure assets are economic drivers in local communities by providing tax relief, employment and economic gains which would be harmful to communities and New Jersey should they prematurely retire.

19. What other industries and jobs may be associated with infrastructure changes necessary to achieve the EMP's goal?

Response: Workforce development is critical to the utilities, as well as developers and other third parties. All parties, including utilities, will need the appropriate level of staffing with proper skill sets to integrate and maintain clean energy technologies effectively with the distribution system.
With the introduction of these technologies, utility workforce development and training practices should be established so that companies have the resources required to monitor and operate adequately these new assets on the system. Key positions will need to be added and developed as these emerging technologies will require the management of new interfaces between the utility and the new technologies. The costs of all these required additional resources, whether personnel or equipment, must be recoverable by the utility.

Environmental Justice

20. How can infrastructure be responsibly and effectively sited while taking into consideration environmental justice concerns?

Response: Distribution infrastructure should be sited to meet the utility's statutory obligation to provide safe and reliable service. RECO supports the development of low use properties including better use of brownfields and blight zones rather than retirement or degradation of forest and farm land. This should be done with care and concern if these low use properties are in low income and poor economic zones.

21. How should costs for reliability and security be allocated?

Response: Utility costs of investments to modernize the grid should be itemized as capital expenditure, recovered through rate case filings or IIPs, and borne by all ratepayers as modernization of the grid benefits all ratepayers. For example, grid modernization technology and equipment that facilitate customer options regarding energy usage and alternatives provides increased visibility and understanding of the behavior of the grid and as such benefit all customers. Operational and maintenance costs of any grid modernization asset likewise should be part of a traditional rate filing and recovered from all ratepayers as these costs support the benefits from these investments on an ongoing basis.