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STEFANIE A. BRAND
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October 12, 2018

Via Hand Delivery
Ms. Aida Camacho-Welch, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 3rd Floor
Suite 314
Post Office Box 350
Trenton NJ 08625-0350

Re: 2019 New Jersey Energy Master Plan
BPU Docket No. Undocketed Matter

Dear Secretary Camacho-Welch:

Enclosed for filing please find an original and ten copies of the Division of Rate Counsel's Comments for the 2019 New Jersey Energy Master Plan proceeding. These comments are being submitted pursuant to the Board of Public Utilities' Notice dated September 12, 218 in this matter. Pursuant to the notice, an electronic copy will be emailed to EMP.comments@bpu.nj.gov.

We have also enclosed one additional copy of the materials transmitted. Please stamp and date the copy as "filed" and return to our courier. Thank you for your consideration and attention to this matter.

Respectfully submitted,

Stefanie A. Brand

Stefanie A. Brand
Director, Division of Rate Counsel

Enclosure
SAB/lg

Division of Rate Counsel's Comments to the Energy Master Plan Committee
Submitted October 12, 2018

Clean and Renewable Energy

I. General

In Executive Order 28, Governor Phil Murphy found that "New Jersey must shift away from its reliance on fossil fuels as a primary energy source and turn to clean energy sources," and established as a goal the conversion of the State's energy profile to 100% clean energy by January 1, 2050. Further, the recently enacted clean energy legislation establishes an interim goal of 50% clean energy by January 1, 2030, while placing caps on the electric utility rate increases that may be imposed to achieve the interim goal L. 2018, c. 17, sec. 2; N.J.S.A. 48:3-87(d)(2). The current process is intended to result in the issuance in mid-2019 of an Energy Master Plan ("EMP") that will set forth the State's basic strategies for achieving these goals. Updated EMP Notice dated Sept. 12, 2018, p. 1.

The goal of 100% clean energy by 2050 is an ambitious one. In order to achieve it within the existing practical and legal constraints, the State will need to conduct the transition in the most cost-effective matter. Considerations of affordability need to be at the forefront of discussions about every policy initiative. The State will need to demand cost-effectiveness and rely on markets and competition wherever possible to keep costs down. The technologies and projects selected for State support must be the most cost-effective alternatives. Similarly, the siting of clean energy-related development should be market-driven and secured in a least-cost, competitive fashion. Rate Counsel opposes "adders" or "factors" that would increase incentives for facilities on specific types of sites. While the State's clean energy initiatives may result in

development of brownfields and other low-use properties, this should not be a focus of the State's clean energy policy.

It is also important to strictly define the goal to include only power that is both renewable and clean. Resources should be spent on initiatives that will promote the goal, rather than "transitional" fuels and technologies that will create stranded costs and delay achievement of the goal.

Finally, the benefits and burdens of this endeavor must be allocated fairly. Achieving the goal will require sacrifice by everyone, including those who seek to profit. It will be important not to allow those who will profit from this endeavor to determine what will be included and how it will be paid for. The transition to clean energy should be implemented in a way that is fair and beneficial for everyone, including the State's low-income residents and communities.

a. Definition of Clean Energy

As stated in Executive Order 28, the State's ultimate goal is to substitute clean energy sources for fossil-based energy. Clean energy" should be defined as energy that is both non-fossil based and clean—in other words, renewable, sustainable and non-polluting energy sources. The definition should include solar, wind, hydroelectric, geothermal and marine energy. Biomass should be limited to sources that have been shown to be sustainable. It should not include nuclear power, waste-to-energy any non-renewable or fossil-fueled energy. This definition is consistent with the Intergovernmental Panel on Climate Change ("IPCC") definition of "Renewable Energy," i.e. "Any form of energy from solar, geophysical or biological sources that is replenished by natural processes at a rate that equals or exceeds its rate of use."

Rate Counsel recognizes that there is a need for flexibility between now and 2050 and that it will take time to achieve the goal. Rate Counsel supports and encourages the

establishment of interim goals based on realistic assessments of what can be achieved over time. However, this does not mean the definition of clean energy should change to the make the goal easier to reach. The goal, and its definition, should stay constant in order to assure that the focus remains on achieving the goal. Rate Counsel notes also that definitional changes have the potential to result in new investments in infrastructure to support non-clean fuels. This could delay the transition and result in additional stranded costs.

b. Obstacles

The costs of new and developing technologies, and uncertainties about costs and other issues, are significant obstacles. The State should examine the barriers to new technologies and various means for overcoming those barriers, including an analysis of the cost-effectiveness and economic impact of each approach.

Fixed subsidies and other forms of direct financial support for new technologies can be costly and inefficient because policy makers often do not know how much support is needed. Fixed rebates should be de-emphasized. The State should focus on market-based methods to assure that technologies are implemented at the lowest possible cost. It will be important to design market mechanisms in a way that ensures ratepayers will see the benefits of declining costs as new technologies become more mature.

The lack of a comprehensive federal energy policy is also an obstacle. It may be challenging to achieve New Jersey's goals in isolation. Additionally, current efforts by the Federal Energy Regulatory Commission and PJM to evaluate the functioning of PJM's energy and capacity markets could present a substantial challenge. Some of the market mechanisms under consideration could impede or neutralize state-funded support for clean energy.

The transportation sector will be an important part in achieving the State's overall goals. Further comments on this sector are provided in the Clean and Reliable Transportation section below.

II. Transition and Technology

a. Transition process

New Jersey has already begun the transition to clean energy. We can draw on a substantial body of experience and data in developing the most effective and cost-effective strategies for achieving our goals. It will be important to make the most of the information we have. The State should evaluate its progress on key metrics such as changes in energy use per customer, avoided emissions, and rate impacts. Such an analysis should identify best practices that can be used in New Jersey. Using this analysis as a foundation, there should then be a systematic evaluation of different pathways to attaining its clean energy goals. The State should evaluate each approach based on criteria including costs, emissions reductions, energy bill impacts, and both positive and negative overall economic impacts. Throughout the transition, the State should maintain its commitment to continuing evaluation and improvement of its clean energy initiatives.

It will be important to keep in mind that the transition to clean energy production will not take place in a vacuum. The goals for development of clean power resources need to be developed in conjunction with other aspects of the State's energy policy. Attention to energy efficiency and conservation is an important step that can begin immediately. Energy efficiency and conservation are the most cost-effective energy resources. It will be important build on the State's existing energy efficiency and conservation programs in order to meet the State's clean energy goals at a reasonable cost. Further comments on energy efficiency and conservation are

provided in Reducing Energy Consumption section below. The transportation sector also will be an important part in achieving the State's overall goals. Further comments on this sector are provided in Clean and Reliable Transportation section below.

b. Selection of Investments

The State should focus on allowing competitive market forces to determine investments and minimize costs. Market mechanisms should be used to identify the most cost-effective solutions. The State should be continually evaluating emerging technologies for both energy production and conservation. However, development efforts should follow a careful evaluation of cost-effectiveness and economic impacts. It is important that decisions to support specific technologies be driven by consideration of costs and benefits, not by stakeholders with financial interest in particular technologies. Also, technologies must be "used and useful" prior to inclusion in utility rates. Other funding sources should be used to pay for research and development.

Pilot programs may be useful in providing information and feedback on program design, market response, and lessons learned. It is important that pilot programs be properly designed to produce useful information. Pilot programs should be limited in scope and duration, and they should be designed to include data collection and evaluation. They should not be expanded to permanent programs until the evaluation is complete.

The State should take a cautious approach in making investments in infrastructure that support non-renewable energy sources, and "transitional" technologies, so that such investments do not become impediments to the ultimate goal or result in excessive stranded costs. The proposed Penn East gas transmission project is an example of a project that should be carefully evaluated to determine whether such a large expenditure on a long term fossil fuel asset is

needed or is wise given the transition we are undertaking. The State has limited authority to constrain the construction of new non-renewable generation but the potential for creating stranded costs and delays should be considered in evaluating utility proposals for additional infrastructure investments. Utilities making such proposals should be required to include an analysis of the potential for requested investments to become stranded or to slow progress toward achieving the State's clean energy goals.

The State also should recognize the tension between the need to avoid stranded costs and many current proposals for investments to improve resiliency. Although some such investments may be appropriate, they are not investments in renewable energy, and should not be supported with clean energy funds. Further comments on this issue are provided in Reducing Energy Consumption section below.

III. State Policy

State policy should prioritize measures that do not require increases to utility rates, such as building codes and appliance standards. The State should also focus on leveraging other sources of funding to support its clean energy efforts. Going forward, there should be periodic reviews to assure that clean energy goals are being met in a cost-effective manner.

a. Solar

In the upcoming proceeding to restructure the State's solar market, the State should incorporate competitive market mechanisms to assure that utility consumers receive the benefits of declining costs. Similarly, the offshore wind funding mechanism and capacity solicitations that are currently under development should use market-based mechanisms to assure that the most cost-effective resources are selected.

b. Storage

Energy storage will play an important role in meeting the State's clean energy goals. This makes it important to develop these resources in a cost-effective manner. Rate Counsel notes that efforts to encourage the development of energy storage have stalled. The State should focus on analyzing market barriers and identifying the most cost-effective ways to overcome those barriers. The ongoing microgrid pilot program may provide some useful information for this process. The feasibility studies that will follow the first phase of this pilot will need to be thoroughly reviewed and analyzed before moving forward to the detailed design and engineering phase.

Any development initiatives for energy storage should rely on competitive market mechanisms to assure that the most cost-effective solutions are implemented. The State should avoid earmarking incentives for specific technologies. Thermal energy storage technologies need to be considered alongside other more expensive storage. Ice energy technologies and hot or chilled water storage can be used to shift load at a fraction of the cost of technologies such as battery storage. Clean and Reliable Transportation section below.

The State should also recognize that the present net metering program is a significant obstacle to the development of storage. The current program allows net metered customers to use the grid as free or low-cost storage. This results in a disincentive for net metered customers to invest their own funds in storage. The net metering program needs to be restructured to remove this obstacle.

IV. Planning and Zoning

Local energy planning can provide significant savings in energy usage and energy costs. Local officials can develop energy plans that will be the most effective in meeting the needs of

the community. Also, community-specific energy plans can be useful in identifying opportunities and evaluating effectiveness. The State should encourage community energy planning and offer technical assistance with local energy planning. However, the State should be cognizant of the need to avoid cost-shifting. Subsidies and incentives should not be provided to some communities at the expense of others. Also, the State needs to avoid using clean energy resources to promote investments that are primarily for resiliency rather than clean energy.

The State should take a cautious approach to zoning and planning law changes. Changes should not be made unless and until specific barriers that impede progress toward the State's clean energy goals have been identified. The State should remain cognizant of the need to avoid zoning changes that could increase burdens on communities that are already overburdened. Changes that are advocated by proponents of specific technologies should be viewed with particular caution. The State should continue its policy of protecting preserved farmland and open spaces.

V. Economic Growth and Workforce Development

While economic development and job creation are secondary benefits of the State's clean energy program, the primary focus should remain on the State's clean energy objectives. The State should take care to assure that economic development and job creation are not used as justification for initiatives that would not otherwise pass muster.

The State needs to be cognizant that the identifiable jobs that are created when resources are expended on clean energy development are only one side of the equation. When rates increase to pay for these investments, there is a corresponding reduction of economic activity in other sectors of the economy. Thus energy efficiency and clean energy investments result in both new jobs and job losses. Although the lost jobs are not as easily identifiable as the created

jobs, they can be estimated using accepted economic models. Any evaluation of the economic impact of the State's clean energy initiatives needs to consider both positive and negative jobs.

Rate Counsel does not see a need for State intervention to develop a supply chain for clean energy-related industries. In the past, market forces have worked well to identify workforce needs. As needs are identified, the State can provide resources to assist with education and training.

VI. Environmental Justice

It will be important for the State to assure that that the transition to clean energy is fair to everyone, including overburdened communities. Utility costs will be an important issue for these communities, their businesses and residents. Climate change already creates disproportionate impacts on the State's disadvantaged communities. Extreme weather events resulting from climate change can be deadly for people who are unable to afford high energy costs. It is important to keep affordability as a central consideration, to avoid detrimental impacts on these communities, their residents and businesses.

The State should engage with overburdened communities to develop clean energy initiatives that will meet their needs and not the needs of developers. It is important to keep in mind that it is not necessary or appropriate to include every type of clean energy measure in every community. As an example, electrification of buses may be more beneficial to some communities than electric vehicle charging stations. The State should take particular care to avoid burdening disadvantaged communities with unwanted development. For example, focusing on energy efficiency may be more beneficial for areas than developing sites for renewable generation in areas that are already congested.

Access to clean energy-related jobs is likely to be a priority for overburdened communities. Any job training programs should be designed to include these communities, by physically locating programs in those communities, actively recruiting residents to participate in the programs, and providing job placement resources. The State should actively engage the communities in developing these programs.

Reducing Energy Consumption

I. General

Under the recently enacted clean energy legislation New Jersey utilities must achieve enumerated annual reductions in customer use of electricity and gas in the state within the next five years. The legislation has also specified that the Board of Public Utilities ("Board") may adopt an emissions portfolio standard applicable to electric power suppliers in the state with the goal of achieving a reduction in emissions.

As the Board and New Jersey utilities endeavor to meet these mandates, the cost of these measures must be at the forefront of the decision-making process. We must be able to fully understand how and whether technologies and programs implemented with the purpose of energy reduction will add an unexpected financial burden to ratepayers despite any savings which results from lower electric and gas usage. Ratepayers' contributions toward the important goal of reducing energy consumption and emissions cannot be viewed as limitless. A full analysis of the potential ratepayer costs versus ratepayer benefits should be a considerable driving factor in this process.

Appropriate rate structures are needed that capture the incremental costs of serving any new load attributable to electric vehicles and electric heating and to help ensure that this incremental electric load is directed to off-peak hours in order to avoid adding to peak load and burdening other ratepayers with the associated costs.

Ratepayer-funded programs led by the NJ Clean Energy Program ("CEP") should play a leading and vital role in supporting energy reduction strategies associated with electric and natural gas utility service. Ratepayer-funded programs should coordinate and integrate building measures (including energy efficiency, renewable energy, and storage) to provide comprehensive

energy efficiency solutions for customers. Ratepayer-funded programs can also have customized/targeted programs to address utility system constraints, mitigate capacity peaks, improve grid utilization, and avoid transmission and distribution system infrastructure costs.

Additionally, the state should initiate an evaluation process conducted by an independent evaluator to study the benefits relative to the costs for each EE program funded by ratepayers. Any EE programs funded by utility rates, should be proceeded by an analysis of the cost-effectiveness and value of such programs taking into account the interests of ratepayers as a whole.

Regarding utility versus state-run programs, the utilities have had difficulty demonstrating that their programs provide incremental benefits on top of benefits provided by the CEP, particularly when program participants receive incentives from both the state and the utility for the same measure. Efforts to transform energy efficiency into a monopoly service provided only by the utility should be rejected. Utility efforts should be channeled into areas that do not overlap with the CEP, to prevent further free ridership problems. Also, a statewide free-ridership study should be conducted to determine the level of participation and savings the CEP would have achieved absent the utility programs. Such a study will provide critical inputs to help assess where utility efforts have been most successful and cost effective.

The state can reduce energy consumption by adopting advanced building codes and appliance standards, by providing technical assistance and grants for communities that commit to reducing municipal energy use (including use by buildings, water and wastewater facilities) and by expressing a set target over a set time period. The state can also take the lead on providing technical assistance for communities to accelerate adoption of clean heating and renewable technologies. The state should conduct two types of studies to determine how useful building

codes could be in reducing energy consumption. First, it should study the savings potential for codes and standards. The next type of study would be a scenario analysis, in which the state can identify various feasible paths to reaching the state's key clean energy goals. With regard to commercial buildings, programs that help customers to track, document, and analyze total site energy use, energy use by source/type, and variables that tend to correlate with energy use will be helpful.

The State's overall policy and strategy construct should be developed through a governmental process. With respect to the private sector, the State's efforts should endeavor to address market barriers (for example, access to capital, split incentives for rental buildings, information asymmetries) and other considerations, such as the utility service issues of low-income utility customers. Additionally, If state design standards or procurement policies do not currently consider energy use and source as criteria in procurement decisions, they should be updated to do so.

The state should review, monitor, and report on the bill impacts of clean energy development over time, with particular emphasis on the disparate energy burdens of low-income households and disadvantaged communities. The affordability of utility services is a key concern. The costs of EE and RE measures need to be considered in the context of affordability. The state should conduct an assessment of climate vulnerability for persons with high energy burdens in different parts of the State, including assessments of housing stock. The siting of any new generation and other energy facilities, especially near over-burdened communities, needs to consider the aggregate "environmental load" of communities as well.

Clean and Reliable Transportation

I. General

As set forth below, there are significant positive steps New Jersey can take now through electric tariff design to "pave the way" for greater EV adoption, without burdening our State's traditional public utility ratepayers.[1] With respect to electric public utility service as well as other services, a major concern is affordability, for residential, commercial and industrial customers. When it comes to climate change, New Jersey's electric public utility ratepayers are already contributing their share, funding - through their utility bills - energy efficiency and renewable energy programs designed to reduce the carbon footprint of the Public Utility Sector of NJ's economy.

Reducing the carbon footprint of the Transportation Sector of New Jersey's economy is also an essential part of our State's response to climate change. However, New Jersey's public utility ratepayers should not be asked to shoulder the cost of reducing the carbon footprint of the Transportation Sector. That said, as set forth herein, there is much that can be done in the Public Utility Sector to support electrifying the Transportation Sector, without resorting to subsidies from other electric utility ratepayers.

Two principles should guide the role of New Jersey's electric distribution utilities in the support of the electrification of the Transportation Sector. First, much like the pricing of other public utility services, Electric Vehicle ("EV") users should bear the costs of charging EVs, including infrastructure and energy costs, with very limited exceptions, as set forth below. Care

[1] The within comments focus on Battery-Electric Vehicles ("BEV") which are propelled exclusively by rechargeable battery powered electric motors, as compared to Hybrid Electric Vehicles ("HEV") which are powered by a combination of battery and fossil fuels, and Plug-in Hybrid Vehicles ("PHEV") which have limited external recharging capabilities. At this juncture, BEVs have the greatest potential impact on the electric grid and supply resources. The within comments do not address Natural Gas Vehicles ("NGV") or other approaches to reduce the carbon footprint of the Transportation Sector.

should be taken to avoid ratepayer-funded subsidies for electrifying the Transportation Sector. Instead, the State should focus on allowing competitive markets to function in the clean transportation industry.

Second, the role of New Jersey's Electric Distribution Companies ("EDCs") in the EV recharging marketplace should be limited. That's not to say that an unregulated affiliate of a New Jersey EDC can't enter the EV recharging market, supported exclusively by its shareholders. However, any involvement in EV recharging marketplace by a regulated EDC should be limited to grid support administrative activities, tariff rate development, grid-integration information technology, constructing the necessary grid upgrades and, perhaps, managing an RFP-type process for selecting competitive suppliers to develop severely uneconomic EV charging locations. Infrastructure investments such as charging stations and related distribution facilities should not be included in an electric utility's rate base.

As set forth below, the keystone of an effective utility support structure for the promotion of EVs is the establishment of a separate tariff and rate schedule for EV charging. A properly designed separate cost-based EV charging rate structure would support the integration of EVs into the electric grid and accelerate the build-out of the associated utility infrastructure, all without burdening other utility ratepayers with additional costs.

Ultimately, the rate and extent of EV adoption in New Jersey boils down to "product" in auto industry parlance. At present, vehicle manufacturers have yet to deliver an EV which meets the needs of all but a relative handful of vehicle buyers. Today's EVs are very expensive, relative to their conventionally-fueled counterparts. For example, at $36,620 the Chevrolet Bolt has an MSRP over two times the MSRP of a comparably-sized internal combustion vehicle, such as a Honda Fit ($16,190). The lowest priced popular EV, a subcompact Nissan Leaf, is priced at

$30,000 - comparable to a mid-sized internal combustion automobile. And the best-selling EVs, the Tesla models, are priced beyond the reach of most vehicle buyers, and are clearly in luxury car price territory.

Undoubtedly, there will be advances in battery technology and vehicle design through 2030 and 2050 which may address these EV shortfalls. These technological advances may render today's prognostications about the future of EVs moot, yet the basic long-standing principles outlined above – that users should bear the costs, and a limited role for utilities – should guide State policy through these developments.

II. State Policy

In the electric public utility sphere, much can be done to eliminate barriers and support the growth of EV adoption in our State. Specifically EV charging should fall under a separate electric tariff rate class, and the role of regulated electric public utilities in the EV charging market should be limited.

The utilities will remain responsible for ensuring that electric distribution, transmission, and generating resources are capable of serving anticipated EV load without adversely affecting their ability to provide safe, adequate and proper service to other ratepayers. The BPU should encourage the development of EV infrastructure through a competitive market, rather than allowing regulated EDCs to enter the competitive portions of the industry, potentially stifling competition. EDC involvement in the EV charging marketplace should be limited to such activities as grid support administrative activities, tariff rate development, grid-integration information technology, constructing the necessary grid upgrades and, perhaps, managing an RFP-type process for selecting competitive suppliers to develop severely uneconomic EV charging locations. In sum, the overarching theme of any EV infrastructure plan should be to

facilitate a competitive EV charging market that is not dependent on or distorted by subsidies from captive, non-EV-using electric ratepayers.

Other States have embarked on enacting measures to encourage EV adoption. Various states are using funds from the $2.7 million allocated to states for clean transportation programs from the VW diesel pollution settlement. This includes electric transit (Georgia, Rhode Island, Ohio) and supporting charging infrastructure (Colorado and California).

The Board of Public Utilities should also establish separate cost-based EV charging tariffs for all EV charging at Level 2 and above, encompassing separate residential and commercial sub-classes.[2] The BPU should focus on developing rate structures that ensure that to the maximum extent possible, EV infrastructure and system upgrades necessary to serve EV load are paid for by those who are using that infrastructure. For example, time of use (or "TOU") pricing under an EV charging tariff would help prevent EVs from adding to costly peak period demand and, in turn, foster a market for new energy technologies such as battery storage. The role of battery storage in EV charging in conjunction with TOU pricing and cost-based demand charges cannot be overstated as a tool to smooth the load of EVs on the grid and avoid surges in peak demand.

Commercial EV tariff sub-class customers providing EVSE services would obtain service at cost-based rates and charges under an EV tariff, yet could conceivably re-sell electricity to EV users at competitive market-set retail per kWh rates and charges. Board policy and the commercial sub -class within EV tariffs should facilitate the re-sale of electricity for EV charging at market set per-kWh rates and other retail charges. Further, cost-based demand

[2] Level 2 charging is conducted at 220 Volts AC, similar to the voltage serving a residential electric dryer or central air conditioner. This will require a separate meter initially. As Vehicle-to-Grid ("V2G") technology develops, onboard vehicle telemetry equipment can supplement an external meter and could expand EV metering coverage to lower-level Level 1 (110 Volt) charging as well.

charges incorporated in the commercial EV tariff would provide a strong incentive for Electric Vehicle Servicing Equipment ("EVSE") operators to adopt battery storage technologies as an integral part of the charging infrastructure, thus mitigating their contribution to local peak demand even when providing charging services during peak times.

Additionally, a separate cost-based EV tariff would recognize EV load as distinct from other commercial energy use. As a class, retail stores, convenience stores, automobile retailers, commercial offices, and other establishments in the commercial electric tariff classes have already done much to improve their energy efficiency and reduce their carbon footprint. Recognizing the unique load profiles of these traditional commercial customers as compared to EV charging, an EV tariff commercial sub-class would permit commercial establishments hosting EVSE on site to preserve and advance the energy efficiency goals for their own facilities, while also simultaneously supporting EV adoption.

A commercial EV tariff sub-class would also empower EVSE operators, by providing them with direct control over their energy use and supply. EVSE operators could employ battery storage to reduce their demand charges.

EVSE operators could also secure their energy supply directly, whether it's 100% green energy supply or some other mix, and offer a choice for EV customers analogous to offers of Regular, Plus and Premium gasoline for owners of internal combustion vehicles. Therefore, it will be important to coordinate the development of clean electric power resources with the State's policies on transportation. Finally, a commercial EV tariff sub-class for commercial operators of EVSE would provide greater ease in administration since the energy use attributable to EV charging would be independent of other energy use at their facility.

An EV tariff could also incorporate special EV-specific clauses applicable only to the EV class to support severely uneconomic charging locations to both improve geographic coverage to reduce range anxiety, and expand the market for EVs, including inner city areas. Over time, as the charging infrastructure is built out, the EV-specific clauses would be expected to shrink in size.

This cost-based EV-specific clause strategy aligns with the adoption pattern experienced by other new technologies introduced into a competitive market, such as personal computers, cell phones, and flat screen televisions. Early adopters typically expect to pay more, and do so, in the early stages of market development. Here, an EV-specific rate clause to support infrastructure development would mirror the adoption experience of new technologies introduced in competitive markets. Over time, prices drop significantly as initial development costs are recovered and more consumers enter the market.

In addition to cost-based demand charges, an EV tariff should also incorporate revenue tests - much like current BPU main extension policies - to support the construction of any necessary grid upgrades and reduce the possibility of any future stranded costs. However, infrastructure investments such as charging stations and related distribution facilities should not be included in the electric utilities' rate base. Finally, a separate EV tariff would generate critical data for system planners, so they can effectively integrate EVs into the electric grid and supply resource modeling and planning.

In sum, the establishment of a separate cost-based EV charging tariff is a step the BPU can take now to foster EV adoption, unleashing all the benefits mentioned here and supporting the development of EV infrastructure without burdening other electric customers.

III. Technological Advancements

The goal of any State effort to encourage or guide R&D efforts should be to ensure that the right market structures and incentives are in place to ensure that the development of the EV market is consistent with cost-effective and reliable service to all New Jersey electric ratepayers, including EV owners, and that the costs imposed by EV users are not shouldered by other electric customers. By implementing a well-designed cost-based EV-only tariff including TOU or real-time rates, the Board can incentivize information technology at both the vehicle and charger level that helps users respond to this rate structure for the mutual benefit of the users (through lower-cost charging during off-peak times) and the electric grid.

A well-designed cost-based EV charging tariff will also make it possible to capture any Demand Response ("DR") attributes of EV charging, which will provide an incentive for manufacturers and EVSE entities to develop and deploy technology that can provide DR- and storage-related grid services.

The BPU and other State entities should also encourage and participate in efforts to develop standards for on-board EV and EVSE metering equipment and software. Standardization will foster the ability of EVs and EVSE to generate secure, usable utility-grade data for EV charging (metering) and usage which would facilitate the integration of EVs into electric grid planning, investment, and operations. In the absence of measures to control the timing of EV charging, EV charging is likely to exacerbate system peaks and impose further stress and costs on the distribution system.

Similarly, cost-based demand charges within the construct of an EV tariff could provide an incentive for the development of battery storage technology to reduce peak loads. An EV tariff would also provide EVSE operators with more direct control over their energy supply and,

in turn, offer EVSE charging customers an array energy supply choices, including 100% green renewable energy . Energy supply choices for EV owners would likely expand the market for green energy in New Jersey, thereby fostering greater use of renewable energy sources.

IV. Infrastructure Investment

As stated earlier, two principles should guide the development of the infrastructure needed to support EV adoption in our State. First, much like the pricing of other public utility services, EV users should bear the costs of charging EVs, including infrastructure and energy costs, with very limited exceptions. Second, the role of New Jersey's regulated electric public utilities in the EV recharging marketplace should be limited.

That said, EVs present an additional load on electric grid and supply resources. EDCs would need some mechanism to gather data in order to plan for additional EV load on the grid, down to the circuit level. Perhaps, early on EV owners and potential EV owners could register with their local utility to assess local grid circuit capacity, much like the addition of new building construction. Over time, the data generated by the establishment of an EV charging tariff would help guide system planning by EDCs.

Regulated EDCs should not be involved in EVSE operation and construction. EVSE operations and development should be conducted by competitive businesses, much like the current gasoline service station model of system growth. Infrastructure investments such as charging stations and related distribution facilities should not be included in an electric utility's rate base. Unregulated, competitive affiliates of regulated EDCs could be involved in EVSE operations, with shareholder funds, subject to any BPU regulations governing such involvement.

New Jersey's electric ratepayers should not be called upon to fund the infrastructure necessary to support EV growth, nor should they be called upon to provide incentives for EV

adoption. EV growth could instead be funded by private investment, or from such sources as the VW settlement funds.

V. Reliability and Security

The effect of increasing alternative fuel vehicle adoption on energy generation and the utility distribution system will be determined by the policies and incentives established by the BPU and the utilities that affect EV owners, EVSE entities and other electricity customers. Time of use pricing under a cost-based EV charging tariff would help prevent EVs from adding to costly peak period demand and, in turn, foster a market for new energy technologies such as battery storage to smooth the load of EVs on the grid and avoid surges in peak demand. Cost-based demand charges would provide a strong incentive for EVSE operators to adopt battery storage technologies as an integral part of the charging infrastructure. As mentioned above, by expanding EVSE customer energy supply choices a cost-based EV tariff and a competitive EV charging marketplace can support the growth of green renewable energy supply resources.

Even with the best-designed tariffs and incentives, however, certain infrastructure investments will be required to accommodate level 2 or higher charging technology, especially if there are multiple level-2 charging stations operating on the same distribution circuits. This strain on the system will be exacerbated if EV users are not given the tools, information, and incentives to manage their charging or to allow the utility to manage their charging in response to resource availability. Thus, a cost-based EV tariff has a three-part role in maintaining grid reliability: (1) providing the information and incentives necessary to limit additional stress on the system; (2) supporting utility-grade data collection on the locational and timing patterns of EV charging to support optimal grid upgrades and maintenance; and (3) ensuring that EV owners - and not other electric ratepayers - bear the cost of any required upgrades necessitated by their

incremental use of the system. EDCs continue to have the responsibility of ensuring the grid and supply resources are sufficient to meet anticipated electric load including EV charging load.

With regard to security, a high priority for the incorporation of EV and EVSE technology into the grid through any V2G technology must be maintenance of cybersecurity. Already many major US companies have had their security compromised by "hacks" from third parties and foreign state actors.[3] With the addition of thousands (and potentially hundreds of thousands) of new "intelligent" EV and EVSE telemetry devices from a range of vendors and manufacturers interacting with the utility grid, the risk of intentional or inadvertent compromise of grid operations and security, or transportation systems, must be taken very seriously.

Finally, policies and procedures should be developed to address EV charging issues in the event of widespread power outages, such as that experienced in Superstorm Sandy.

VI. Economic Growth and Workforce Development

EVs present a new and unique use of electric resources because they involve service to a mobile (non-stationary) customer with practical alternative fuel choices and are not tied in a monopolistic sense to a specific regulated public utility. The growth of EV sales will require more EVSE charging stations. A wide range of possible third party providers of charging service exist, including vehicle manufacturers, auto dealerships, gasoline retailers, convenience markets, food supermarkets, shopping malls, office building owners, parking lots, etc. Because of this wide range of potential participants, the provision of EV charging services should be regarded as a competitive market independent of traditional utility market sectors, and the BPU should tread carefully to avoid impeding the development of that market.

[3] See, for example: https://www.bloomberg.com/news/features/2018-10-04/the-big-hack-how-china-used-a-tiny-chip-to-infiltrate-america-s-top-companies?srnd=premium.

It may be that public policy imperatives ultimately support some form of subsidization of charging infrastructure in severely underserved areas. However, this should not be implemented as a regulated cost-of-service utility function and should be funded to the maximum extent possible by those who use the services, such as through an EV tariff or through a dedicated mechanism such as the VW settlement funds.

Whether a particular charging market segment is competitive, potentially competitive, or not should entail a study with supporting evidence and a finding on competition by the Board. Through this process, the Board can also identify underserved markets which are not even potentially competitive and develop programs and measures to serve these markets.

Structurally separate unregulated affiliates of EDCs, subject to the EDECA's provisions governing the provision of a competitive service, could compete to serve EV charging markets much like any other competitive supplier. Involvement in EV charging services by EDCs, if any, should be subject to the relevant laws and Board regulations governing competitive services. In any case, EDCs and their affiliates should be placed on an equal footing with other potential suppliers of managed charging programs and measures should be put in place to ensure that EDCs and their affiliates cannot leverage their status as utility providers and affiliates to the detriment of potential competitors. Infrastructure investments such as charging stations and related distribution facilities should not be included in an electric utility's rate base.

VII. Environmental Justice

Ideally, all of our State's residents should have access to convenient EVSE facilities. However, certain markets might be prohibitively uneconomic to serve, but require EVSE coverage to support the local economy and residents, as well as to ensure a robust charging network for all EV users.

As stated earlier, whether a particular charging market segment is competitive, potentially competitive, or not should entail a study with supporting evidence and a finding on competition by the Board. Through this process, the Board can also identify underserved markets which are not even potentially competitive and develop programs and measures to serve these markets. If the Board finds, after a proceeding open to stakeholders, that "Charge Ready" type initiatives are needed in such markets, third party vendors should be permitted to bid to provide these services.

A competitive RFP-type bidding process to serve any subsidized locations would likely lower the cost to ratepayers and foster the market for charging services and EVSE businesses. Regulated EDC involvement would be detrimental to the development of EV services. Infrastructure investments such as charging stations and related distribution facilities should not be included in an electric utility's rate base. However, unregulated affiliates of EDCs could also bid to provide this service. The costs of such programs to facilitate EV use should be assessed via tariff mechanisms on the beneficiaries of such measures, namely, EV users, rather than other ratepayer classes. This process will help ensure wider access to EVSE charging services in a cost-effective manner.

Building a Modern Grid

I. General

The NJ Electric Distribution Companies have a total of several thousand miles of wire, and several hundred substations, some of which are over 70 years old. While some components of the grid are adequate, it is clear that other components require timely replacement and modernization. The EDCs have to provide safe and reliable service and those tenets do not change with modernization endeavors. Distributed generation, electric vehicles, smart grid technologies, electrification, and demand side management have created different opportunities for EDCs to address and manage.

What has not changed with the grid is the movement of electrons from generator to meter. As we move forward with grid modernization, the type and distribution of generators is changing. We are moving from centralized generation to a more decentralized system. This requires more monitoring and a more responsive grid than before. The grid will not change overnight, it is has to be a gradual, deliberative, and transparent process that ultimately delivers a safe and reliable grid at a reasonable cost to ratepayers.

When modernizing the grid, there are several factors to consider: which components are obsolete and which are adequate? Which future components address current and future needs and which provide the most benefits to ratepayers at a reasonable cost? Another factor to consider is how to prevent the overbuilding of the distribution grid while keeping in mind that the EDCs have the ability to gradually modernize the grid and recover those costs through the course of a normal rate case.

The evolving grid should: enable the adoption of cost-effective distributed energy resources and technologies that decrease customer outage durations and incidences. It should

also enable the adoption of technologies that decrease customer energy usage and utility bills. Finally, it should enable the adoption of technologies that decrease carbon emissions at a reasonable cost to customers while allowing all technologies to compete on an equal footing.

PJM has looked at the issue of fuel security and said that there is no concern. New Jersey already has a RPS requirement and has recently issued an RFP for offshore wind. The policies are encouraging both fuel diversity and renewable adoption. New Jersey has adopted restructuring so it does not directly regulate generation and ultimately competition in generation has historically brought good outcomes for ratepayers.

A modern grid should utilize a purposeful and transparent integrated distribution planning process to help ensure that utilities are appropriately planning to ensure all technologies are fairly evaluated and that ratepayers are adequately protected. Moreover, such a planning process may help prioritize investments that benefit disadvantaged communities. This grid can meet the greenhouse gas emissions reduction requirements of the Global Warming Response Act and the Governor's goal of achieving 100% clean energy by 2050 by allowing the integration and delivery of more cost-effective renewable generation and demand side management to reduce carbon emissions.

II. State Policy

State policies can support a modern grid by requiring a regular transparent planning process and evaluation of technologies. This would provide certainty for the utilities and must be transparent to ensure that the costs are reasonable for ratepayers and that the benefits outweigh the costs. Utilities currently have the ability to modernize the grid through the normal

ratemaking process and through NJAC regulations. Future performance metrics should be developed to match the State's goals.

The State could help to manage energy costs while upgrading the grid by reducing overall energy consumption across the state. This reduces the EDC's load share allocation for future regional transmission and may also delay or eliminate the need for future transmission projects. Cost-effective renewables and DSM will also reduce overall energy costs for participants and non-participants through price mitigation. Subsidies should not be given to untested or unproven technologies. For example, AMI has never been able to prove cost-effectiveness, especially since most of the "benefits" are lost jobs.

If a modernized grid includes microgrids, there is a question of who owns and pays for such systems, who controls them and , how they can be operated to benefit the overall grid. Costs for grid upgrades and operation should be allocated fairly among beneficiaries of the upgrade and operation of grid. Cost causation principles should be maintained.

The question of incentives or subsidies for upgrading the energy distribution system is a important policy decision. Any incentives and subsidies should be analyzed to make sure they are appropriately sized, that they actually bring about the behavior we want, and that they don't transfer wealth from the poor to those who are better able to afford it. Affordability is an important part of the discussion and has to be at the forefront of any analysis of what should be done.

III. Technology

A modern grid could help facilitate the adoption of numerous cost-effective technologies both in terms of distributed renewables and demand side management. To that extent, the

adoption of such technologies needs to lower utility bills for ratepayers. Any new and developing technologies must be cost-effective. Technologies that could benefit the grid include: Advanced Meter Infrastructure, Internet of Things and data analytics. However, they still need to demonstrate cost-effectiveness. Reducing energy losses are admirable, but encouraging the reduction of energy usage through cost-effective means might be more impactful.

The adoption of additional distributed energy resources may require localized control and visibility to ensure appropriate system tolerances. The EDCs should have detailed knowledge of their system in order to adequately plan for increased distributed energy resource penetration. The utilities need to make the business case that advanced distribution monitoring or distribution monitoring systems to manage and control the energy distribution systems are investments necessary and cost-effective to the benefit of ratepayers.

With regard to natural gas leak detection, federal and state regulations currently outline the frequency of leak inspection for gas infrastructure. New Jersey has to continue to work in tandem with federal authorities to ensure the safety of gas operations by the utilities.

Increased automation and communications on the electric grid creates opportunities for cybersecurity breaches and also increases the impact of cybersecurity breaches in terms of data breaches and operational impacts. The utilities must be accountable for maintaining the confidentiality of customer data and they cannot sell it.

To build out a modern grid in terms of cyber security, New Jersey already has the New Jersey Cybersecurity and Communications Integration Cell ("NJCCIC") and it could follow FERC Order 848 and require the reporting of attempted cybersecurity breaches. NJCCIC could

provide a forum for utilities to share best practices and information to prevent and mitigate cybersecurity breaches. NJCCIC could also provide a repository for cybersecurity reports.

IV. Economic Growth and Workforce Development

In terms of the development of the modern grid, the utilities are facing the retirement of staffing. They would be in the best position to identify what educational skills and training are needed to operate a more connected and integrated grid. The skills required are probably like other industries facing automation and integration of increasingly sophisticated technologies.

V. Environmental Justice

Grid modernization needs to benefit disadvantaged communities by improving service reliability and lowering overall utility bills. No new rate structures are needed to enable cost-effective EE, distributed energy resources, and variable renewable energy resources.

The current barriers to the distribution of affordable renewable energy are similar to barriers to cost-effective energy efficiency that include, but are not limited to: imperfect information, split incentives, lack of capital, high transaction costs and lack of access to products. In building a modern grid, there should be disparately impacted and requirements in distribution planning requirements to benefit disparately impacted communities.

Sustainable and Resilient Infrastructure

I. General

The State must be aware of the federal wholesale market as it implements any programs. The costs of transmission continue to increase at significant levels, increasing costs to ratepayers. Affordability remains a key element of the Board's statutory mandate, and the costs emanating from federal markets must be considered. Additionally, PJM and FERC are in the process of making major changes to the PJM capacity market, the energy market and possibly how all generation is compensated. These changes will have cost and implementation implications to New Jersey and the State must continue to monitor these developments and be prepared to be flexible as it implements its EMP agenda. As a member of PJM, it is the position of NJ Rate Counsel that costs for grid upgrades should be allocated fairly among the beneficiaries of the upgrade and operation of the grid. Any costs for a project built in New Jersey, but providing benefits to an entity in NYISO or in other states should be borne by the beneficiaries of the project, regardless of their geographical location.

II. State Policy

New Jersey has already allowed its Electric Distribution Companies ("EDCs") to modernize and reinforce its distribution system. Most notably, multiple EDCs have implemented distribution automation and other modern technologies to improve system reliability during major weather events and under normal weather conditions. Billions of dollars have already been approved and spent to achieve better outcomes and if or when these improvements are tested, they will certainly put us in a better position. In addition, New Jersey has adopted new vegetation management rules that helps improve the resiliency and reliability of the distribution system without the need for changing existing infrastructure. In this sense, the existing regulatory regime is well equipped to reach the State's 2030/2050 goals and we believe "new regulatory paradigms" such as decoupling are not necessary to ensure reliability, resiliency or sustainability.

III. AMI ("Advanced Meter Infrastructure")

While the utilities and others tout the benefits of AMI, none of them have been able to demonstrate to date that broad scale deployment of AMI produces more benefits than costs. Indeed, an industry journal recently reported that regulators in Kentucky, Massachusetts and North Carolina have rejected the implementation of AMI meters because of poorly structured business cases. [4] In rejecting AMI programs, the Commissions in those states made clear that a viable AMI program should show that AMI meters are: 1) needed; 2) reasonable least cost options, and 3) taking full advantage of the smart meter's advanced capabilities.

In New Jersey, the Board approved a Rockland Electric AMI Pilot program a little over a year ago.[5] Under the program, Rockland Electric is currently installing AMI meters to residential and commercial buildings for all 70,000 of its customers. After the program is up and running, the Company may seek recovery of the costs in a base rate case, to provide an opportunity for the Board to make sure that that the costs are prudent and that there are benefits for ratepayers. While that pilot is being conducted, the Board placed a moratorium on new AMI applications. Rate Counsel is very interested to learn how the Rockland Electric pilot turns out and what it shows us about the benefits and costs of AMI.

Rate Counsel strongly believes that AMI must be cost-effective before it can be deemed "prudent" and recoverable from ratepayers. In addition, concerns as to who ultimately owns the data compiled by the AMI meter and how the privacy of the customers will be protected must be addressed. Finally, the transformation of the state's infrastructure to be more secure, resilient, and modern may result in stranded assets. For example, replacement of utility meters on a broad scale may create stranded costs because the existing meters that the AMI will be replacing will no longer be used even if they have not yet reached the end of their useful life. Rate Counsel therefore applauds the Board for its deliberate and mindful rollout of AMI. By implementing a small scale AMI pilot program first, we can learn from the successes and mistakes to determine whether and/or how AMI should be implemented elsewhere in the State.

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[4] Utility Dive, August 31, 2018 "Kentucky Regulators Reject Smart Meter Plan" https://www.utilitydive.com/news/as-kentucky-regulators-reject-smart-meter-plans-troubling-trend-continues/531384/

[5] I/M/O the Petition of Rockland Electric Company for Approval of an Advanced Metering Program; and for Other Relief, BPU Dkt. No. ER16060524, Decision and Order (8/23/17).

Another consideration for secure, modern, and resilient infrastructure is cybersecurity concerns. Increased automation and communications of the electric grid creates opportunities for cybersecurity breaches. The state should provide a forum for the sharing of best practices and information so that entities can address cybersecurity issues, prior to the implementation of more advanced technologies.

IV. Workforce Development

The questions posed by Board Staff in connection with jobs primarily focused on utility staffing issues. We agree that it is essential to have recruitment and training programs to ensure continued adequate staffing, However when considering the job impact of programs, it is also important to consider the possible negative job impact if utility rates become unaffordable. Losses of jobs because businesses cannot afford to stay and operate in New Jersey will have a dampening effect on New Jersey's economy. Without question, there are positive benefits to many of the policies under consideration, but this must be balanced against the corresponding negative impact that uncontrolled spending will have on the State's employment opportunities.

In addition, when reviewing specific proposals, such as AMI, the impact on jobs should be considered. The primary quantification "benefit" from AMI is the reduction of meter reading staff. Impacts such as this should be considered when analyzing the benefits of such programs.

V. Environmental Justice

As the State grapples with the EMP mandates, the impact on disadvantaged communities must be considered. Benefits should be applied fairly and the cost of measures must be at the forefront of the decision making process. We must continue to ask, "how will the cost of new technologies impact customer bills, especially for low income people?" Rate Counsel continues to advocate for the least cost and most effective alternatives. Rate Counsel also maintains that traditional ratemaking principles of cost allocation, where the ratepayers that cause the utility to incur a cost should ultimately be responsible for paying for that cost, should guide the implementation of these policies. In that way, the impact on disadvantaged communities - and all ratepayers - can be fairly balanced.