DRAFT 2019 ENERGY MASTER PLAN

COMMENTS OF THE NEW JERSEY DIVISION OF RATE COUNSEL

September 16, 2019

INTRODUCTION

Pursuant to N.J.S.A. 52:27F-14, et seq., Governor Philip Murphy issued Executive Order 28 which directed the Board of Public Utilities ("Board", "BPU") and other state agencies ("EMP Committee") to develop an Energy Master Plan ("EMP") for the State.[1] On June 10, 2019, the EMP Committee released a draft EMP entitled, "Draft 2019 Energy Master Plan: Policy Vision to 2050" ("Draft 2019 EMP"). The Draft 2019 EMP sets forth seven strategies ("Strategies") to reach the goals of 100 percent clean energy and 80 percent emissions reductions from 2006 levels by 2050.[2]

Prior to the release of the Draft 2019 EMP, seven public hearings were held, including working group meetings on numerous energy topics. Subsequent to the release of the Draft 2019 EMP, eight public hearings were held at various locations throughout the State. The within comments are submitted in response to the EMP Committee's invitation for interested parties to submit written comments on the Draft 2019 EMP by September 16, 2019, including responses to the list of specific questions for which the EMP Committee particularly sought feedback.[3] The Division of Rate Counsel ("Rate Counsel") presents its general comments first, and then follows with its comments on the questions presented in the Strategies set forth in the Draft 2019 EMP, together with its responses to specific questions posed by the EMP Committee.

[1] Executive Order No. 28 (May 23, 2018).
[2] Draft 2019 EMP, p. 9.
[3] BPU Notices (June 10, 2019; August 21, 2019).

GENERAL COMMENTS

Governor 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 some of 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) ("Clean Energy Act", "CEA"). The current stakeholder and comment process is intended to result in the issuance of an Energy Master Plan which will set forth the State's basic strategies for achieving these goals.

Rate Counsel represents and protects the interest of all consumers -- residential customers, small business customers, small and large industrial customers, schools, libraries and other institutions in our communities. Rate Counsel is a party in cases where New Jersey utilities or businesses seek changes in their rates and/or services. Rate Counsel also gives consumers a voice in setting energy, water and telecommunications policy that will affect the rendering of utility services well into the future.

Rate Counsel applauds the Governor, the Board of Public Utilities ("Board", "BPU"), the Department of Environmental Protection ("DEP") and other EMP committee members for drafting such an ambitious Energy Master Plan. Rate Counsel supports many things in this document, including the ambitious goals for achieving a more renewable portfolio of generation and reducing our carbon dioxide and other emissions.

Affordability

The goal of 100% clean energy by 2050 is an ambitious one. While developing plans to achieve this goal within the existing practical and legal constraints, the State will need to implement a transition in the most cost-effective matter, with an equitable allocation of the costs and care for the well-being of our most vulnerable residents. Considerations of equity and affordability need to be at the forefront of discussions about every policy initiative.

In pursuing its long-term clean energy goals, New Jersey must focus squarely on energy solutions that are both renewable and clean. Resources should be spent on initiatives that will promote this long-term goal, rather than on "transitional" fuels and technologies that will create stranded costs and hinder or delay achievement of the ultimate goal.

Finally, both the benefits and the burdens of this transition must be allocated fairly. 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. 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.

This leads to a major concern about the Draft 2019 EMP: the absence of any analysis of the costs and rate impacts of the strategies set for in the draft. The proposed Integrated Energy Plan has yet to be completed. Absent this analysis, together with an analysis of rate impacts (see below), the strategies presented in the Draft 2019 EMP cannot be fully vetted by stakeholders. Therefore, the comment period for the EMP process should be extended to permit stakeholders

to provide additional comments once estimates of the projected costs and rate impacts are known.

Integrated Energy Plan

The Board is also working on an Integrated Energy Plan ("IEP"), discussed in the Appendix to the Draft 2019 EMP, that will do some modeling of potential EMP scenarios going forward, but the public has little insight and input into how that modeling will ultimately be conducted.[4] At a recent IEP planning meeting, several general modeling parameters were addressed, but frankly some of what we learned was troubling. Some assumptions, such as assuming that New Jersey generation stays in New Jersey or that New Jersey could be self-sufficient from PJM, are simply unrealistic and could result in skewed modeling results. While Rate Counsel understands the IEP process is still unfolding, Rate Counsel urges the Board to bring greater transparency to the process, and to take advantage of the expertise throughout New Jersey to craft modelling assumptions that will truly help us determine a least cost path to achieving the Global Warming Response Act ("GWRA") goals.[5]

One of the assumptions considered for the IEP which was discussed in an IEP planning meeting raises an issue that is seen elsewhere in the EMP. That is the dubious assumption that New Jersey's three existing nuclear units will continue to operate until 2050 and that ratepayers will continue to subsidize those plants until that date to whatever extent becomes necessary to keep the plants open.

First, New Jersey's three nuclear units are not licensed to 2050 nor there reason to believe they will seek or be granted license extensions beyond the sixty years granted by the Nuclear

[4] Rate Counsel addressed many areas for improvement in comments filed with the Board on August 7, 2019, regarding the proposed IEP modeling construct being developed for the 2019 EMP.

[5] P.L.2007, c. 112.

Regulatory Commission. By 2050, Salem 1 would be 74 years old; and Salem 2 would be 70 years old. We have not seen license extensions for plants that old anywhere in the country. It is far more likely that they will have reached the end of their useful lives well before 2050.

The existing nuclear units are also likely to be uneconomic by then, following a national trend driven by the introduction of more low-cost renewable sources of energy and the significant price drops as technology continues to mature. There is no reason to assume that we will continue to rely on and subsidize an outdated and non-renewable technology for that long. Further, continued subsidization of nuclear plants could limit New Jersey's ability to take advantage of local offshore wind projects as the cost and performance of that technology continues to improve. At a minimum, the IEP process should consider scenarios in which these nuclear resources are retired and within the next ten years, under which ratepayer resources can be diverted from subsidizing aging nuclear units and towards investments in new, clean energy sources.

As noted above, Rate Counsel has also questioned the assumption that New Jersey's three nuclear units will continue to operate beyond their current permits. Rate Counsel understands that the Staff IDP consultants now intend to include increased capital and operations and maintenance costs for the extension of the three units (Hope Creek, Salem 1 and Salem 2) beyond their current sixty-year license. However, Rate Counsel is concerned that the modeling exercise currently treats the New Jersey Zero Emission Credits ("ZEC") as a transfer cost that is therefore not factored into the IEP analysis. This is simply not an accurate assessment of the actual costs of these plants. ZEC costs could be included as part of the reference cases, but they should not be left out entirely. A scenario that models the impact of retiring the nuclear units

early could help New Jersey policymakers explore other options to meet the state's climate emission goals.

Rate Counsel requests that the Staff IEP Consultants provide the supporting documentation for the assumptions (e.g., capital costs of new fossil and renewable resources, load growth projections, EV and electrification adoption rates) used in the IEP modeling scenarios before the next stakeholder meeting. Rate Counsel would like to understand the modeling topology of the Evolve model that addresses zonal differences within New Jersey and within the modeling regions in terms of both energy and capacity. Rate Counsel has concerns regarding that specific assumption with regards to siting constraints. Rate Counsel believes that the assumptions documentation could be provided as a webpage or as appendices to the final report.

Rate Counsel also wishes to express its concern that the IEP modeling does not include a rate impact analysis. The rate impacts of the various scenarios that are being modeled are of utmost importance. Rate impacts are a key consideration in developing policy and thus must be a key output of the Staff IEP Consultant's modeling efforts. While the modeling analysis will emphasize "least cost," the impact of these costs on New Jersey households, businesses, and industries has to be examined in a comprehensive fashion. At minimum, the Staff IEP Consultants should examine rate impacts, on an average rate basis, across the three primary customer classes: residential; commercial; and industrial. These annual, cumulative and discounted (on a net present value basis) class-specific rate impacts need to be a key output of the modeling effort.

Further, rate impacts should be translated into bill impacts by examining, concurrently, the changes in the overall rate of energy costs and the changes in energy usage (and efficiencies)

that may arise from various EMP scenarios. While rates are likely to increase from most of the EMP scenarios being examined, there could be reductions in energy use arising from efficiency or fuel switching activities that could lower overall energy bills.

Rate Counsel is also concerned about the modeling approach being used by the Staff IEP Consultants to estimate renewable energy development (both imports and in-state resources). Rate Counsel encourages the Staff IEP Consultants to consider that a large amount of renewable energy comes from outside New Jersey, particularly onshore wind resources. These resources are not physically constructed or developed for New Jersey utilities, nor are a large number of these onshore wind resources tied to New Jersey load via purchased power agreements.

Rate Counsel also suggests that the Staff IEP Consultants be mindful that the future of solar in New Jersey is uncertain and will likely not see any form of clarity until the solar transition mandated by P.L. 2018, c. 17 (the "Clean Energy Act") is completed by the Board. While the Staff IEP Consultants have indicated that they anticipated modeling solar development on a least-cost basis, and will examine a range of solar installation costs by: size (capacity), type (rooftop, commercial, grid-scale), and allocation; the actual installations will likely differ considerably from what is "least-cost."

"Clean Energy"

Rate Counsel also has concerns about the definitional change at page 9 of the Draft 2019 EMP that defines "clean energy" to be "carbon-neutral," ignoring other important environmental concerns. An overreliance on nuclear energy as a "carbon-neutral" source to move the goal posts to 100% clean energy by 2050 does not actually bring us to our clean energy goals in a realistic and affordable way. Further, any assumption that New Jersey ratepayers will be subsidizing

nuclear energy for the next 30 years is inconsistent with the market based system established in EDECA and of the obligation to ratepayers to preserve just and reasonable rates.

Basic Generation Service ("BGS") Auction

Along those same lines, at page 48 of the EMP, there is mention of a possibility of a "carbon neutrality requirement for BGS load." This is a very bad idea. The BGS auction has been working well for many years and provides reliable, competitively-priced electricity to New Jersey's residential and small commercial customers. Imposing a carbon neutrality requirement for BGS load would severely limit competition within the BGS auction, as the only carbon free generation that would then be available to serve residential load would be nuclear power and some renewables (although it will take many years for there to be enough renewables to serve that much of our load). This will result in much higher rates for BGS customers as there will be many fewer bidders, and the largest available capacity by far might all be owned by one generator. It also is unlikely to be effective since customers could then just flee the BGS tariff and sign up with third-party suppliers for lower rates. New Jersey would then be subsidizing - via the BGS auction - nuclear energy produced in or going to other states, rather than actually transforming our in-state sources of generation.

That passage on p. 48 also refers to the possibility of a "clean energy market that competitively sources carbon-free energy." It is unclear what this will entail, but it might be a better option. Some other states use competitive procurements to promote certain sources of electricity. Whether this is an option for New Jersey requires greater thought and detail, but it is certainly a more realistic option than a carbon neutrality requirement for BGS load.

Of course, one of the most obvious ways to reduce our reliance on energy sources that release greenhouse gases is to put a price on emissions and recycle the revenues for GHG

reducing programs. This is similar to what RGGI is attempting to accomplish. This option needs to be considered more directly and should be included in any modeling as an alternative.

The plans for both the EMP and IEP should also include ongoing evaluation and a mechanism for course corrections along the way. We need a detailed plan for implementation, looking at specific usage and cost projections. There is nothing in the Draft 2019 EMP that calls for ongoing evaluation and analyses of costs and benefits. Without independent, objective and systematic evaluation over the long term, it is unlikely that the EMP's objectives will be reached in a cost effective manner. This is an essential component of any plan going forward and should be specifically addressed in the EMP.

Energy Efficiency

Regarding energy efficiency ("EE"), Rate Counsel strongly urges the Board not to allow utilities to establish monopolies in their service territories. It would lead to very different options for customers in the different service territories. Some utilities might offer a comprehensive set of cost-effective options which complement other EE programs, while others will likely would not, based on past experience. It would also force plumbers and carpenters, etc. to go through the utility to get the work, with the utility tacking on administrative fees and profit, thus leading to higher prices. Utilities should focus on complementing the Office of Clean Energy ("OCE") programs and doing things – like on-bill financing- that OCE cannot do. Rate Counsel, therefore, agrees very strongly with the statement in the Draft 2019 EMP on p. 60 that says we need both utility and OCE programs. Rate Counsel also agrees with the discussion on p. 62 that in order to lower costs, other sources of capital for EE and RE, such as "green banks," etc. should be explored, beyond utility financing.

Rate Counsel also urges the Board not to award additional revenues to the utilities through decoupling. Our State is one of only four states that allow utilities to earn a return on their EE investments.[6] If we allow the utilities to earn a return on EE investments through a surcharge as we do now, be awarded incentives under the Clean Energy Act, and also recover lost revenues through decoupling, our State's ratepayers will overpay for EE the way we did for many years for solar. New Jersey just cannot do that and still afford to reach our goals. If there is any inclination to award lost revenues or decoupling, then it must come with a repeal of RGGI Section 13.

Renewable Energy

On solar and other renewables, Rate Counsel looks forward to discussing how to move forward with the transition. Obviously any effort to get around the caps included by the Legislature in the Clean Energy Act would be inappropriate and contrary to the statute. Those caps are rather generous, and many other states have managed to develop thriving solar industries without the high subsidies New Jersey has been paying for solar. One way to reduce costs and allow for solar developers to get financing is to encourage the use of competitively-procured long term contracts. This would provide both competitive prices and sufficient certainty to procure financing. Rate Counsel believes that New Jersey can find a cost-effective way forward on solar and looks forward to being part of those discussions.

One more point about Renewable Energy Certificates (RECs") for out-of-state renewables (other than solar). There is no reason to pretend New Jersey is an island. New

[6] National Conference of State Legislatures, *Promoting Cost-Effective Utility Investment in Energy Efficiency* (2019). Available at: http://www.ncsl.org/research/energy/promoting-cost-effective-utility-investment-in-energy-efficiency.aspx; and American council for an Energy Efficient Economy, *Snapshot of Energy Efficient Performance Incentives for Electric Utilities* (2018). Available at: https://aceee.org/topic-brief/pims-121118.

Jersey is part of the PJM grid and power flows out of New Jersey and into New Jersey. Putting aside any Commerce Clause issues with trying to create preferences for in-state renewable energy, we would simply be getting in our own way if we start to draw those lines.

Advanced Metering Infrastructure ("AMI")

With respect to the discussion regarding AMI on p. 78, Rate Counsel agrees that utilities should be replacing meters that reach the end of their useful life with advanced meters. Utilities should have been doing that all along, but have not because they have been seeking pre-approval. The utilities are not entitled to pre-approval, as the BPU recently correctly held.[7] There is nothing standing in the way of utilities gradually and prudently turning over their meters. But to be prudent, the installation of advanced meters should be done in a way that is cost effective and avoids stranded costs.

Grid Modernization

With respect to grid modernization, New Jersey's Electric Distribution Companies ("EDCs") have been making incremental investments to modernize the grid and utility infrastructure through base rates, infrastructure investment programs and storm resiliency programs. No change in the "current utility model" is needed to make that happen. All of the EDCs have also been making investments in distribution automation, which can provide some of the monitoring and communications that are part of the Governor's plan. Just because New Jersey does not have a full roll-out of AMI, it does not mean that New Jersey is lagging behind other states.

[7] I/M/O RECO AMI, BPU Dkt. No. ER16060524 (Order, 8/23/17).

With increased AMI and grid modernization, we do need to be especially vigilant regarding customer privacy and data protection. New Jersey has a long history of having very protective regulations and Board precedent protecting customer data and those protections should absolutely be maintained. This is one of the most important issues for customers and there is no need to create additional concerns since the protections we have are already what we need. These protections should be maintained. Furthermore, in light of instances of foreign state hackers intruding into critical infrastructure systems, New Jersey needs to be ever vigilant to ensure that on our critical utility infrastructure SCADA systems are protected in the course of grid modernization.

Utility Integrated Distribution Plans

Rate Counsel strongly supports the EMP's call on page 74 for utilities to develop Integrated Distribution Plans ("IDPs"). This is a necessary step for efficiently and effectively locating and integrating distributed resources and prioritizing grid updates. Rate Counsel urges the Board to develop guidelines for what should be included in an IDP so that there is consistency among the utilities and across the state.

Transmission Costs

Rate Counsel also wholeheartedly supports the EMP's discussion at p. 76 regarding the costs of transmission. Rate Counsel agrees that New Jersey should take on a greater role in overseeing the need for transmission and its costs. Rate Counsel supports increasing the BPU's role in reviewing the need for and siting of transmission, as is done in other states.

COMMENTS ON SPECIFIC STRATEGY QUESTIONS

Strategy 1: Reduce Energy Consumption and Emissions from the Transportation Sector

Strategy 1 Questions:

(1) In considering the policy mechanisms suggested in Strategy 1, how should the state seek to implement the policies to reduce transportation-related emissions? What policy mechanisms have we missed?

(2) **The state seeks to "lead by example" in the electrification of its fleet. What case studies, cities, states, etc. should New Jersey look to and learn from as it rolls out clean light-duty vehicles and buses?**

(3) **Over what timeline should the state seek to rollover its light-duty (passenger) fleet to EV? Over what timeline should the state rollover its bus fleet? Please also consider incremental milestones.**

(4) How can the state work with the private sector to increase publicly-accessible EV charging infrastructure?

(5) How can the state work with the private sector to advance the technology for medium- and heavy-duty vehicles and incentivize private sector adoption of alternative fuel vehicles?

(6) What policy mechanisms should the state develop to reduce greenhouse gas emissions at its ports?

Rate Counsel supports the goals articulated in the Energy Master Plan ("EMP") of promoting alternate-fueled vehicles that can reduce pollution and avoid emissions of greenhouse gases. However, as a matter of fundamental fairness, the costs of electrifying the Transportation Sector should not be borne by public utility ratepayers. Utility ratepayers already bear the burden of reducing the greenhouse gases and other emissions emanating from the Utility Sector, by funding the costs of the Renewable Portfolio Standard, Net Metering activities, as well as costs associated with RGGI and various other energy efficiency and renewable energy programs. That said, a number of points addressed in the 2019 draft EMP are addressed here.

First, the benefits and burdens of increasing EV use must be considered from the perspective of utility ratepayers. At the outset, there should be no ratepayer money collected to fund the rebates for the purchase of EVs, which was suggested by the 2019 draft EMP at p. 31. Today, electric vehicles are primarily owned and used by wealthier individuals, reflecting the

significantly higher up-front cost of most electric vehicles compared to their gasoline-powered counterparts. For example, the Chevrolet Bolt has a Manufacturer's Suggested Retail Price ("MSRP") over two times the MSRP of a comparably-sized internal combustion vehicle, such as a Honda Fit.[8] The lowest priced EV, a subcompact Nissan Leaf, is priced comparable to a mid-sized automobile.[9] And the best-selling EVs, the Tesla models, are clearly in luxury car price territory. The use of incentives, such as a $5,000 EV rebate, does not change the outcome of that calculus.[10] If the State believes that rebates for car buyers are a necessary component of meeting its transportation goals, these rebates should be funded from other sources, such as the VW settlement fund or RGGI proceeds. Importantly, such incentives should come from sources other than the monthly electric bills paid by ratepayers, many of whom do not own any vehicles at all.

Instead, Rate Counsel believes that any expenditure of public resources for promoting transportation electrification should be focused on expanding access for all New Jerseyans, and particularly for lower-income and environmental justice communities. For example, electrifying the fleets of public city transit buses and vans would be an important step towards realizing the goals of the EMP, and would also ensure that environmental benefits are realized in environmental justice areas which already face poor air quality.

Second, the state's regulated utilities should stay out of the business of electric vehicle charging and servicing. Nor should New Jersey's utilities be building charging infrastructure on a rate-regulated basis. To the greatest extent possible, EV charging and servicing should be left to the competitive market, without interference or competition from regulated utilities. A wide

[8] According to Edmunds.com as of September 9, 2019, the "basic" Honda Fit has an MSRP range of $16,190 - $21,520, while the Chevrolet Bolt has an MSRP range of $36,620 - $41,020.
[9] According to Edmunds.com as of September 9, 2019, the Nissan Leaf MSRP range is $29,990 - $42,550.
[10] National Bureau of Economic Research, *What Does and Electric Vehicle Replace?* (Working Paper 25771, April 2019).

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, and so forth. 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 State should tread carefully to avoid impeding the development of that market. There already exists a competitive industry building charging stations and no need to usurp that industry by allowing utilities to monopolize and rate base charging station infrastructure. Furthermore, any contributions from ratepayers should be kept as low as possible as there are other sources of funding available. Charging station owners, vehicle and charging equipment manufacturers, as well as independent generating companies will be in a position to profit substantially from increases in the sale and use of electric vehicles, and they should be viewed as sources of investment in charging infrastructure.

Third, in order to balance load and properly assess cost-causation, the EV charging should be subject to a new EV charging tariff and conditions.[11] Of necessity, the state's utilities will have to be involved in ensuring that local distribution networks are prepared to handle whatever additional load is presented by EVs. These additional costs of supporting EV infrastructure should be recovered from EV users and EV charging service providers through special residential and commercial EV-only tariffs. A properly designed, separate, and cost-based EV charging rate structure would support the integration of EVs into the electric grid and

[11] The Department of Community Affairs' regulations and local ordinances addressing building and electrical codes might also need to be amended to require utility meters for installations of electric EV charging equipment.

accelerate the build-out of the associated utility infrastructure, all without burdening other utility ratepayers with additional costs.

Creating an EV-only tariff will have critical benefits beyond ensuring a fair allocation of EV-related costs to EV users. As the EMP notes, "[w]ith managed charging, battery EVs can charge when there is excess capacity or reduced demand, better utilizing the distribution grid during off-peak times."[12] In theory, because EVs can store electric charge, they could potentially provide grid services such as peak shaving and even reserves. However, EV owners will only provide these services if they are sufficiently incentivized to do so through a well-designed tariff including Time-Of-Use ("TOU") rates. A separate, cost-based EV tariff would also 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. By 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 electric vehicle servicing [charging] equipment ("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. For example, EVSE operators could employ battery storage to reduce their demand charge, or offer premium products and services to EV drivers, such as "blends" of clean energy charging sources, including 100% clean energy for charging.

[12] Draft 2019 EMP, page 28.

An EV tariff could 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. In other cases, an EV tariff could 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 expansion to environmental justice communities. Over time, as the charging infrastructure is built out, the EV-specific clauses would be expected to shrink in size.

However, infrastructure investments such as charging stations and related distribution facilities should not be included in the electric utilities' rate base. Further, while a properly-designed EV-only tariff will help to spur technological innovation such as battery storage solutions that can reduce demand charges, the EV tariff – or any electric rates – should not be used to directly support R&D efforts that are more properly the province of the private sector and other funding sources.

Significantly, a separate EV tariff would also generate critical data for system planners, so they can effectively integrate EVs into the electric grid and supply resource modeling and planning. An incidental benefit of a separate EV tariff would be the ability of an EV tariff to include a rate mechanism (i.e. per kWh) to fund transportation infrastructure projects, a concern voiced by the Draft 2019 EMP at p. 29. 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.

The Charge EV study assumed a total of $700 million over 10 years in ratepayer money as the basis for its finding of overall ratepayer benefits.[13] If other ratepayers are forced to pay more, the costs will quickly outweigh the benefits. Effective implementation of TOU rates and managed charging will mean the difference between EVs imposing excessive stress and costs on the system, and providing benefits to all ratepayers through greater resource utilization.

Beyond this, 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 any New Jersey electric utility's rate base.

Finally, the potential of EVs to shift load to many geographic points on the electric distribution system and the ability to accurately track EV load merits concern, particularly in the vehicle-to-grid ("V2G") applications envisioned by the Draft 2019 EMP at p. 28. With regard to cyber 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, including public utilities, have had their security compromised by "hacks" from third parties and foreign state actors.[14] With the addition of thousands (and potentially hundreds of thousands) of new "intelligent" EV V2G and EVSE telemetry devices from a range of vendors and manufacturers interacting with the utility grid, the risk of intentional or inadvertent

[13] Gabel Associates, Inc. and Energy Initiatives Group, LLC, *Electric Vehicles in New Jersey – Costs and Benefits* (Report for ChargEVC, 1/26/18).

[14] See, for example: https://www.bloomberg.cominews/features/2018-10-04/the-big-hack-how-china-used-a-timi-chip-to-infiltrate-america-s-too-companies?smd=premium.

compromise of grid operations and security, or transportation systems, must be taken very seriously.

In summary, Rate Counsel believes the state's policies for incentivizing and growing the deployment and use of electric vehicles, and the involvement of public utilities, should adhere to the following principles:

- As a rule, electric ratepayers should not be asked to fund incentives, equipment, or infrastructure to support EVs and Transportation Sector of the economy. Ratepayers are already bearing the burden of the cost of existing policies to reduce New Jersey's carbon footprint by decarbonizing the Utility Sector.
- Energy efficiency funding and public benefits charges (i.e. Societal Benefits Charge", "SBC") already imposed on utility ratepayers and collected through utility tariffs should not be used to support the growth of the EV industry or EV deployment, as these initiatives will tend to increase use of electricity in the state, in direct opposition to the purpose of energy efficiency efforts and related ratepayer funding.
- To the greatest extent possible, public utilities should not be in the business of building EV-related infrastructure on a rate-regulated basis and competing with private-sector EVSE entities. If utilities choose to enter this market through their unregulated affiliates, that should be permissible as long as they do not use their preferential access to customers to disadvantage competitive service providers.
- Both commercial and residential EV charging should be governed by special commercial and residential EV-only tariffs, through which EV-related costs should be assigned to EV users.
- All EV tariffs should be based on TOU rates that strongly incentivize charging during off-peak periods and improve grid utilization.
- Cybersecurity issues should be addressed as a primary consideration in the early stages of EV deployment in New Jersey, before EV use and sophistication leads to increasing amount of critical data being shared by EVs and New Jersey utilities.

<u>Strategy 2:</u> Accelerate Deployment of Renewable Energy and Distributed Energy Resources

Strategy 2 Questions:

> **(7) New Jersey is currently targeting the installation of 3,500 MW of offshore wind generation by 2030, but there is likely room for much more growth. Can New Jersey achieve more? Why or why not, and if so, how much is feasible? What concerns and barriers must we address in developing this resource?**

The answer to this question is twofold. First, whether there is cost-effective potential for additional offshore wind ("OSW") capacity should be answered through the Integrated Energy Plan modeling being performed by Rocky Mountain Institute and Evolved Energy Research (collectively, "Staff IEP Consultants"). The cost of implementing technologies and any associated incentive mechanisms to encourage renewable energy development need to be analyzed for cost-effectiveness, rate impacts and economic impacts. This is especially true for an increase in the target quantities of offshore wind generation. A complete analysis of the economic impact of additional offshore wind resources, or any renewable resource, must be performed and must consider both positive economic impacts (i.e. job creation, business development, etc.) and the negative impact resulting from rate increases.

Second, the Board should not unilaterally change existing OSW installation targets unless there is clear evidence that such capacity can be procured at costs that are comparable and competitive with developing other available renewable energy resources and will not unduly burden ratepayers. The policy goal should not be the installation of OSW for the sake of installing OSW, but to install this capacity when and where it becomes an economically attractive resource for New Jersey.

To date, the main barrier to developing more OSW generation has been its high cost, not only relative to the conventional generation market, but also to other renewable energy resources. New Jersey's recent solicitation for 1,100 MW of OSW was done in a competitive manner and resulted in responses from three developers with multiple bids.[15] While these applications reflect a competitive response regarding price, rate impacts, and economic benefits, the resulting price were still significantly higher than that of other renewable resources such as onshore wind (that can be cost effectively secured from other parts of PJM) and large scale solar. Specifically, the levelized cost of electricity from onshore wind is just 36 percent of the price awarded in New Jersey's competitive solicitation for offshore wind ($116.82 per MWh).[16,17] Similarly, large-scale solar is available at 40 percent of the OSW cost ($48.8 per MWh).[18]

(8) How should New Jersey address the solar and New Jersey Class I cost cap established in the Clean Energy Act?

The Board should address this cost cap in the most economical fashion that is consistent with its legislative intent, which is to minimize the cost of renewable energy to ratepayers, particularly for solar energy. The Clean Energy Act directs the Board to transition the solar market away from the current market-based funding mechanism and to establish a new incentive mechanism that will be "efficient" and "orderly" and that will "utilize competitive processes" to continually reduce the cost of achieving solar energy goals.[19] The Clean Energy Act also established a new cost cap to protect ratepayers from incurring excessive RPS compliance costs and directs the Board to "take any steps necessary to prevent exceedance of the cap."[20] This cap

[15] BPU Docket No. QO18121289 (Order, 6/21/19).
[16] Id.
[17] U.S. Energy Information Administration, Annual Energy Outlook 2019.
[18] Id.
[19] N.J.S.A. 48:3-87(d)(3).
[20] N.J.S.A. 48:3-87(d).

reflects the Legislature's recognition that resources are limited and that accordingly, the State's clean energy goals must be pursued with careful attention to costs. Unfortunately, the total cost of RPS compliance will not be known until the outcome of the solar transition proceeding has been determined. The cost of RPS compliance will depend heavily on what happens to the current funding mechanism for existing solar installations as well as future incentive mechanisms yet to be put in place. The State will need to recognize that any new ratepayer-funded programs or incentive mechanisms involving Class I renewable energy (with the exception of offshore wind) will fall under the cost cap.

Rate Counsel supports the intent of the Clean Energy Act to close the current SREC program as part of the State's strategy for meeting its clean energy goals. The SREC program was successful in encouraging solar development throughout the State, but closure of the current program is overdue. Going forward, it will be important to identify a sustainable mechanism to incentivize the continued development of solar energy resources, as well as other Class I renewables, but to do so in a manner that facilitates competition and results in the most cost-efficient procurement.

(9) Does the allowance in the current RPS on the use of unbundled Renewable Energy Certificates (RECs) interfere with state efforts to incentivize in-state renewable energy power generation?

No. The allowance to use unbundled RECs from other parts of PJM enables New Jersey ratepayers to benefit from the lowest-cost renewable energy sources in the PJM footprint. This is one benefit of being part of a Regional Transmission Organization ("RTO") and the EMP should continue to recognize this opportunity. To date, New Jersey has secured a considerable level of low-cost onshore wind energy resources, through the use of unbundled RECs across PJM. A

change or modifications to the use of unbundled RECs will likely lead to higher ratepayer costs, with a negligible air emissions benefit.

Further, the EMP should not adopt any new renewable policy initiatives that could "use up" the renewable energy cost cap established in the Clean Energy Act. To the extent the EMP does establish a new financial mechanism, the modeling by the Staff IEP Consultants should show that such a mechanism can be accommodated by the Clean Energy Act cost cap. Part of this modeling exercise, however, will require the adoption of a number of assumptions regarding the ongoing solar transition process since this process will likely define, in very large part, what financial resources will remain available for any non-solar and non-New Jersey-developed OSW generation.

(10) Which policy mechanisms do you recommend the state implement to lower the cost of capital for in-state renewable energy power generation?

The most important concept in ensuring that new programs continually minimize the cost of achieving the State's clean and renewable energy goals is to incorporate competition in the process. Rate Counsel has repeatedly encouraged the use of competitive solicitations in New Jersey's solar market. An effective policy mechanism that would put downward pressure on the cost of capital for in-state renewable energy power generation is a competitively-bid solicitation. A competitively bid solicitation format conforms to the standards of "competitive processes" and "encourage[s] and facilitate[s] market-based cost recovery through long-term contracts" as required by the Clean Energy Act. The use of competitive processes is thus essential to allow the State to achieve the Clean Energy Act's goals without unduly burdening ratepayers.

(11) What policy, legislative, or regulatory mechanisms can New Jersey develop to ensure that it can most cost-effectively pursue a 100% carbon neutral power sector?

Given the ambitious goals put in place for New Jersey, considerations of affordability need to be at the forefront of every policy initiative and regulatory mechanism. The technologies and projects selected to support these goals, and the means to procuring these resources, must be the most cost-effective options. Thus, clean energy-related development will need to be market-driven and secured in a least-cost competitive manner in order to minimize rate impacts and to maintain the affordability of electricity service in New Jersey.

Further, 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 that ratepayers will benefit from declining costs as new technologies become more mature.

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. However, pilot programs should be limited in scope and duration, and they should be designed to include data collection and evaluation. They should not be considered for expansion into permanent programs until the evaluation is complete.

<u>Strategy 3:</u> Maximize Energy Efficiency and Conservation and Reduce Peak Demand

Strategy 3 Questions:

> **(12) New Jersey is currently targeting annual energy efficiency gains of 2% in the electricity sector and 0.75% in the gas sector. Do you recommend that New Jersey be more aggressive in approaching its energy efficiency goals? Why or why not, how much annually is feasible, and how long of a ramp up period is needed?**

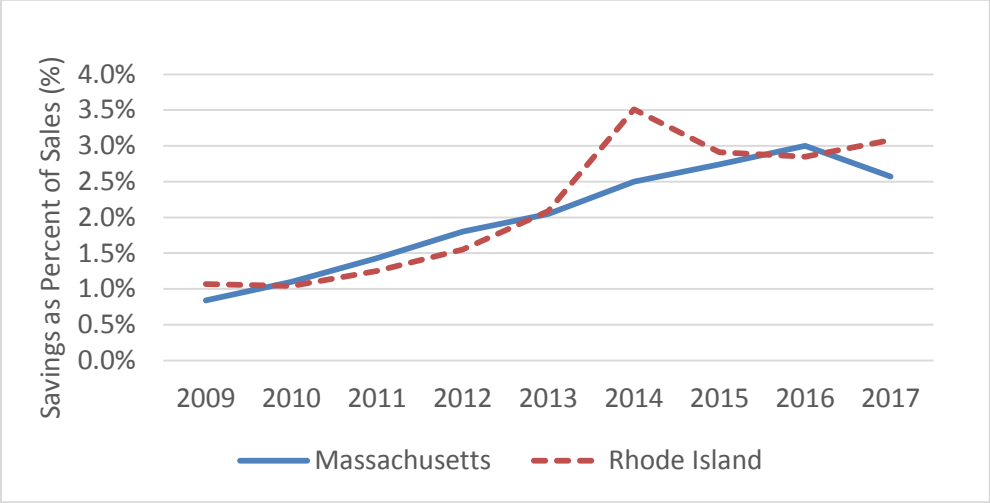
Rate Counsel recommends that the focus be on achieving the statutory targets set forth in the Clean Energy Act first, before setting any higher targets. In addition, the cost of reaching these savings targets must be considered. Rate Counsel recommends that the rate and bill impact analyses should be conducted for any incremental energy savings targets beyond the statutory energy savings targets set forth in the Clean Energy Act. Energy savings programs need to remain cost-effective and net benefits need to accrue to ratepayers.

Generally, Rate Counsel notes that as part of establishing any utility targets, compensation, rewards, penalties, and revenue recovery mechanisms, the Board must establish well-defined and consistent analytical approaches to be used by all of New Jersey's utilities. This includes establishing which cost-benefit tests are to be used for what purposes, what components are to be included in these tests, and how to establish the discount rate and other key assumptions. The quantification of performance relative to Board-established targets cannot be subject to the ambiguity and subjective implementation that have characterized cost-benefit analyses in support of past utility program filings. Well-defined and consistent analytical approaches must also be established for Evaluation, Measurement and Verification ("EM&V") of program performance, including annual and lifetime savings, if new energy efficiency targets are adopted. These standards and approaches should be adopted through a rulemaking process.

Massachusetts and Rhode Island required about 7 years to ramp up energy savings from 1

percent to 3 percent per year, as shown in the figure below (Figure 1). This translates into 0.28 percent per year. A 2015 analysis of savings ramp rates by the EPA shows that leading states have increased energy savings by about 0.3 to 0.38 percent per year.[21] The EPA analysis also finds that the annual average ramp rate from the existing energy savings level was 0.21 percent per year.[22]

Figure 1: Energy Savings (%) in Massachusetts and Rhode Island (2009-2017)[23]



(13) What are the strengths and weaknesses of the utility-run energy efficiency programs, third-party supplier-run energy efficiency programs, and state-run programs that NJBPU should consider?

Utility-run energy efficiency programs, third-party supplier-run energy efficiency programs, and state-run programs each have unique strengths and weaknesses. Utility-run programs have the advantage of existing familiarity with customers. Likewise, customers are familiar with their utility and may be more inclined to participate in a utility-led program. However, utilities might require a higher cost of capital to fund EE projects compared

[21] U.S. EPA (2015) Demand-Side Energy Efficiency Technical Support Document, Clean Power Plan Final Rule, August 2015, p. 81 and 82, Available at https://www.epa.gov/sites/production/files/2015-11/documents/tsd-cpp-demand-side-ee.pdf

[22] Id.

[23] Source: ACEEE's State Energy Efficiency Scorecard reports.

to other funding sources, such as green banks or public funds, since a utility will seek to be paid for its administrative costs and a return on its investment. In addition, due to a utility's monopoly status, it will be difficult for other EE providers to compete with them, which will impact the cost of these programs.

Alternatively, third-party EE providers do not have disincentives to reducing energy sales. For some third-party EE providers, energy efficiency may be the sole focus of the organization, leading to innovative technologies and programs. However, third-party EE suppliers face their own set of hurdles. Third-party EE suppliers may need to spend more on program marketing to increase name recognition. For third-party suppliers that exist in the same jurisdiction as historical or existing efficiency programs (either state-run or utility-run), program overlap can cause customer confusion and jurisdictional tension.

State-run programs have the advantage of being public interest-driven rather than profit-driven, elevating the needs of the consumer and the State's energy savings and policy goals. They also have a number of advantages being a single state-wide administrator, resulting in consistent program parameters, less customer confusion, and more efficient marketing and outreach.

(14) How can the state ensure equitable access to and benefit from energy efficiency programs for all residents?

New Jersey can help to ensure energy efficiency is delivered equitably by identifying market barriers to different participant groups and developing a strategy to overcome those barriers. Energy efficiency programs can leave low-income customers behind if barriers aren't addressed. Low-income customers are much less likely to have capital to invest in efficiency than market rate customers. Energy efficiency providers should be required to offer increased

incentives and incentive structures (e.g., pay as you save arrangements) for low-income customers, or develop other ways to fill the gap between market-rate incentives and the incentive levels needed to encourage low-income customer participation with state funding. Targeting marketing efforts to reach low-income neighborhoods would help, especially those that have outdated housing stock that would benefit from energy upgrades. Increasing accessibility by providing marketing materials in different languages could also help. Partnerships with trusted local organizations (e.g., community action agencies, food banks) can also greatly increase the visibility of and participation in targeted programs. Further, community-based social marketing ("CBSM") campaigns can influence a targeted behavior (e.g., energy consumption) through social and behavioral factors and achieve much greater participation and deeper savings than those achieved by programs that only use economic and attitudinal traits as motivation.[24]

Finally, alternative program delivery (e.g., direct installation of measures) may be helpful for those with limited ability or time to arrange installation themselves. Some customers may lack access to efficiency offerings for reasons other than income. Multi-family housing units present special challenges, where the interests of both landlords and tenants in saving energy must be addressed. New Jersey should identify the existing barriers to participate in energy efficiency programs and develop an action plan to ensure that all ratepayers has access to cost-effective energy efficiency.

[24] National Association of Clean Air Agencies, *Implementing EPA's Clean Power Plan: A Menu of Options: Chapter 13: Pursue Behavioral Efficiency Programs* (2015). Available at http://www.4cleanair.org/NACAA_Menu_of_Options

(15) Which states or cities have successfully implemented stronger-than-average building and energy codes? How should New Jersey seek to strengthen its building and energy codes, and over what timeline?

Some jurisdictions are developing or considering developing "stretch" building codes ("Stretch Codes"), with increased emphasis on energy savings. For example, in 2009, Massachusetts became the first state to adopt a Stretch Code that sets building efficiency requirements above the base building energy code. The Stretch Code is mandatory for local governments that voluntarily elect to become a "Green Community" within Massachusetts. A Green Community needs to implement clean energy policies, including the Stretch Code, with state funding assistance to achieve a certain energy savings target. As of today, there are 270 communities (out of 351 total communities) that became Green Communities and adopted the Stretch Code.[25] Further, Massachusetts legislators recently introduced a bill to create a net-zero energy Stretch Code that needs to be fully implemented by 2030 if it is enacted.[26] Whether this is an option for New Jersey could be explored.

[25] Massachusetts Department of Energy Resources, *"Stretch Code Adoption by Community"* https://www.mass.gov/info-details/building-energy-code#stretch-code-adoption-by-community-

[26] Bill H. 2865. An Act to Establish an Net Zero Stretch Energy Code, https://malegislature.gov/Bills/191/H2865

<u>Strategy 4:</u> Reduce Energy Consumption and Emissions from the Building Sector

Strategy 4 Questions:

> **(16) What policy, legislative, or regulatory mechanisms can New Jersey develop to successfully transition the building industry to develop net zero carbon construction? Over what timeline should the building industry seek to make this transition? What incremental goals and milestones should it set?**

See answer to Question 15.

> **(17) What barriers exist that could hinder successful implementation of new net zero carbon construction?**

Potential barriers include, but are not limited to, (a) lack of information about costs of and building practices for net zero carbon buildings, (b) lack of contractors, engineers and architects who can build such buildings, (c) lack of sufficient training programs and financial incentives, and (d) lack of cost-effectiveness screening practices that appropriately and sufficiently value the benefits and costs from net zero carbon buildings.

> **(18) What policy, legislative, or regulatory mechanisms can New Jersey develop to incentivize and accelerate the transition from oil, propane, and natural gas heating systems to electrified heating systems? Please consider appropriate mechanisms for residential, commercial and industrial buildings. Over what timeline is this achievable? Please also consider incremental milestones for the different fuels and technologies.**

Absent the completion of successive IEP studies going forward and in the absence of any infrastructure programs to support such a transition, it would be premature to speculate at this time about a timetable for a transition. The costs of any such transition for ratepayers must be considered, including the presently unknown costs of infrastructure development, conversions, and stranded costs, in order to address the scenario presented in this question.

<u>Strategy 5:</u> Modernize the Grid and Utility Infrastructure

Strategy 5 Questions:

> **(19) How should New Jersey approach the modernization of the current utility model (e.g., decoupling or performance incentives, rate design, smart grid technology, demand response)?**
>
> **- & -**
>
> **(20) How should NJBPU consider planning and paying for upgrades to the electricity distribution system, including Distributed Energy Resource (DER) connections; EV charging; and utilities' recuperation of cost?**

New Jersey should take a methodical approach to grid modernization to address the policy goals described in the draft Energy Master Plan. Stakeholders should have the opportunity to provide substantive input in an open and collaborative process.

Ultimately, ratepayers will shoulder the costs of grid modernization. As a result, the net benefits from grid modernization investments should accrue to ratepayers. Therefore, New Jersey should utilize metrics and analyses that objectively quantify the associated costs and benefits of grid modernization investments. The Board should also apply a least cost, best fit framework that minimizes costs for a desired outcome. Moreover, any programs for grid modernization must consider cyber-security.

That said, New Jersey's electric distribution companies have always had the opportunity to recover reasonable and prudent investments through base distribution rates. The electric distribution companies ("EDCs") should continue to make investments to maintain safe and reliable service. These investments should include upgrades to the distribution system through the course of normal business operations.

Recently, New Jersey adopted new regulations that enable utilities to have another mechanism to make infrastructure investments outside base distribution spending. In January 2018, the Board adopted new Infrastructure Investment regulations to support distribution

investments that go above and beyond "business as usual" distribution system spending.[27] In broad terms, the Board has indicated that qualifying projects must enhance the reliability, resiliency and safety of the grid. Eligible projects would qualify for accelerated cost recovery. PSE&G, Atlantic City Electric Company, and JCP&L all filed infrastructure investment plans that included upgrades to the distribution system. [28] Board Staff, Rate Counsel, and the EDCs reached Board-approved settlements in each of these cases.

In sum, New Jersey already has a model for infrastructure development to build upon. Under the infrastructure investment regulations adopted by the BPU, New Jersey utilities have already embarked on grid modernization efforts, notably without decoupling, performance incentives or other novel ratemaking ideas.

[27] N.J.A.C. 14:3-2A.1(a).

[28] See I/M/O PSE&G, BPU Dkt. No. EO18060629/GO18060630 (Order, 9/11/19); I/M/O ACE, BPU Dkt. No. EO18060629 (Order, 4/18/19); and I/M/O JCP&L, BPU Dkt. No. EO18070728 (Order, 5/8/19).

<u>Strategy 6:</u> Support Community Energy Planning and Action in in Low-and Moderate-Income and Environmental Justice Communities

Strategy 6 Questions:

(23) How can NJBPU continue to engage with communities to support local energy planning?

The Board should engage with local communities to understand their energy needs, understanding that each local community may have slightly different needs and objectives.

(24) How can New Jersey ensure that LMI households and environmental justice communities benefit from the goals and policies established in the Energy Master Plan?

Rate Counsel believes that low and moderate income households have different energy needs and will require separate EE programs and goals to better serve each community. The Energy Master Plan needs to ensure that net benefits accrue particularly to vulnerable communities.

In principle, the idea of community energy planning to develop programs that benefit local communities is good. Local groups may have better ideas to improve community energy planning compared to outside groups.

With respect to transportation infrastructure, Rate Counsel believes that a primary goal of any State initiative to support the transition to alternative-fueled vehicles should be to enable access for lower-income and environmental justice communities. See Rate Counsel's response to Strategy 1.

(25) What best practices utilized in other states or municipalities should New Jersey consider to support Community Energy Planning?

In 2013, the US Department of Energy ("DOE") published a report on local energy

planning.[29] The DOE report recommended the following ten steps:[30]

- Establish a leadership team;
- Identify and engage stakeholders;
- Develop an energy vision;
- Asses current energy profile;
- Develop energy goals and strategies;
- Identify and prioritize actions;
- Put together a financing strategy;
- Develop a blueprint for implementation;
- Develop evaluation plan; and
- Develop and adopt community energy plan.

The DOE report can serve as the basis for New Jersey to develop polices and mechanisms to support community energy planning.

[29] https://www.energy.gov/eere/slsc/guide-community-energy-strategic-planning
[30] Id.

<u>Strategy 7:</u> Expand the Clean Energy Innovation Economy

Strategy 7 Questions:

> **(26) What industry sectors or job occupations are expected to see growth? Which industry sectors and job occupations are expected to need job training support to ensure an appropriate workforce is available to meet the needs of a growing economy?**
> **(27) What industry sectors or job occupations are expected to stagnate as we get closer to 2050 and beyond, and what retraining tools and strategies can the state use to support transferable skills to new industries?**
> **(28) What are best practices, financial tools, and financial infrastructure that New Jersey should consider in supporting the clean energy economy, attracting private investment, and enabling clean energy opportunities to become more affordable for all?**

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 energy investments, there is a corresponding reduction of economic activity in other sectors of the economy. Thus, energy efficiency and clean energy investments may 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 job impacts.