August 24, 2015

RE: 2011 EMP Update Comments

VIA EMAIL TO: EMPupdate@bpu.state.nj.us

Irene Kim Asbury, Secretary of the Board
Board of Public Utilities
44 South Clinton Avenue
Post Office Box 350
Trenton, New Jersey 08625-0350

Dear Secretary Asbury:

Enclosed please find comments on behalf of the Sierra Club Beyond Coal campaign in the above-referenced matter. Should the Board have any questions about the comments, my contact information is below.

Sincerely,

/s/ Christine Guhl-Sadovy

Christine Guhl-Sadovy
Senior Campaign Organizing Representative
Sierra Club

.erraclub.org

Sierra Club appreciates the opportunity to comment on the 2011 Energy Master Plan (EMP) updates. Sierra Club supports the Board of Public Utilities' efforts to analyze New Jersey's progress toward the 2011 EMP goals and recommendations. While the state has made progress on the goal of reducing energy costs, there is much more that needs to be done to fulfill the 2011 EMP goals and recommendations. The following comments address specific commitments, goals and recommendations of the 2011 EMP.

I. Coal is a major source of CO2 emissions and will no longer be accepted as a new source of power in the State.

Sierra Club supports the Christie Administration's rejection of a proposed coal gasification plant that would have put the health of New Jersey residents, as well as the state's coastline, at risk. By doing so the Administration is sending a clear message that it does not support the false notion of "clean coal". The 2011 EMP recognizes that carbon pollution must be curbed to protect New Jersey from the harmful impacts of climate change. Eliminating coal as a potential new generation source is a step in the right direction, but more must be done to reduce New Jersey's share of climate pollution. **Sierra Club urges BPU to go one step further and include a provision in the 2015 EMP that rejects coal as a source of existing power in the State, and sets a clear timeline for the phase-out of coal use**. This will aid in compliance with the now finalized Clean Power Plan, and will also protect the health of NJ families as coal is also among the largest sources of harmful emissions such as NOx, SOx, and mercury.

The EMP should recognize and plan for compliance with the Clean Power Plan (CPP), and New Jersey will be required to submit a compliance plan to EPA by 2018, or be subject to a federal compliance plan. The CPP targets for New Jersey, although less aggressive than in the draft Plan, still result in one of the lowest emission rates in the country. There are numerous compliance options for the state, and while it appears possible for New Jersey to comply while continuing to burn coal for electricity, that would not be in the best interest of New Jersey ratepayers or the climate.

Figure 1[1] below illustrates why it is in the best interest to phase out coal under the CPP. Emissions and generation data from 2012 (the baseline year against which CPP compliance is calculated) is used to compare New Jersey coal plants to all generation in the state. Since the CPP will place an implicit or explicit price on carbon (depending on the chosen compliance pathway) the most recent result of the Regional Greenhouse Gas Initiative (RGGI) auction is used as a plausible estimate of compliance costs under the rule. Electricity generated from coal is twice as carbon intensive as electricity from gas, and a significant amount of New Jersey's electricity generation is from nuclear and renewable sources, which have no on-site emissions of carbon pollution. In this scenario, the CPP is expected to add $6.71/MWh to the cost of coal generation, but only $0.52/MWh to overall electric costs, a nearly 13-fold difference.

Figure 1. Illustration of possible CPP compliance costs using June 2015 RGGI clearing price for carbon dioxide, and 2012 generation and emission values from New Jersey generators

plant	2012 CO2 tons	2012 MWh	$/ton*	total compliance cost	cost/MWh
BL England 1	85,993	65,410	$ 5.50	$ 472,962	$ 7.23
BL England 2	117,030	100,742	$ 5.50	$ 643,665	$ 6.39
Hudson 2	663,637	838,080	$ 5.50	$ 3,650,004	$ 4.36
Mercer 1	245,584	191,485	$ 5.50	$ 1,350,712	$ 7.05
Mercer 2	205,101	156,484	$ 5.50	$ 1,128,056	$ 7.21
Logan	767,691	630,163	$ 5.50	$ 4,222,301	$ 6.70
Chambers	1,091,754	620,626	$ 5.50	$ 6,004,647	$ 9.68
All NJ Coal Plants	*3,176,790*	*2,602,990*	*$ 5.50*	*$ 17,472,345*	*$ 6.71*
All NJ generation	*15,207,143*	*65,263,000*	*$ 5.50*	*$ 33,828,064*	*$ 0.52*

New Jersey's coal-fired power plants had a weighted average capacity factor of about 15% in 2012. This indicates that they are already among the more expensive electricity generators in the state. Adding the additional compliance cost of the CPP to an already expensive source makes it even less attractive from a ratepayer perspective. And because coal plants tend to take longer to ramp up than gas plants, they are not well suited to act as peaker plants, which only dispatch during a few high-demand times.

[1] CO2 emissions and generation values compiled by M.J. Bradley & Associates, Inc. (Clean Power Plan Compliance Tool v2.0. Statewide CO2 emissions from USEPA CPP fact sheet (http://www.epa.gov/airquality/cpptoolbox/new-jersey.pdf). Statewide generation from Energy Information Administration Electricity Data Browser (http://www.eia.gov/electricity/data/browser/)

Retirement of these coal plants is the most cost-effective way to comply with CPP emissions targets, but additional measures are necessary to ensure compliance. New Jersey's projected 2020 CO2 emissions are nearly 21.3 million tons, which is 40% higher than the 2012 emissions due to the projected addition of a significant amount of in-state natural gas generating capacity. By 2030, the state's mass-based goal for existing and new sources is 16.9 million tons, a 21% reduction from 2020 projected emissions, and a difference of about 4.4 million tons.[2] The 2012 emissions from coal-fired power plants was about 25% of this required reduction. Assuming we stop burning coal in NJ, about 3.3 million tons of reductions will have to come from natural gas power plants. The most cost effective way to replace that generation will be energy efficiency, as discussed further below.

II. New Jersey will work to shut down older, dirtier peaker and intermediate plants with high greenhouse gas emissions.

Coal is the single-largest source of greenhouse gas emissions in the electric sector. New Jersey does not need coal, as evidenced by the relatively small amount (11%) of the state's electricity that is supplied by coal power plants. However, the remaining coal plants emit a disproportionate amount of pollution. PSEG Hudson and PSEG Mercer produce 1.5 million tons of CO2 pollution annually, while their low respective capacity factors of 19.5% and 8.5% qualify them as intermediate or peaker plants. These coal generators epitomize the "older, dirtier" plants referenced in the EMP. Furthermore, these coal plants are not cheap. The operating cost of PSEG Mercer is $90 per megawatt hour while PSEG Hudson's operating costs are even greater at $99 per MWh.[3] To put this in perspective, the power plants are in the 77th and 88th percentile respectively when compared to generation costs within the PJM regional grid. Furthermore, the levelized cost of energy efficiency

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[2] USEPA Clean Power Plan Fact Sheet for New Jersey: http://www.epa.gov/airquality/cpptoolbox/new-jersey.pdf

[3] Unless otherwise cited, power plant financial and operating information reported herein are from a model generated by SNL Financial and available by subscription. Data inputs include publicly reported values from EIA Forms 823 and 860, FERC Form 1 and RUS 12.

investments averages $28 per MWh.[4] **The Sierra Club urges that the Administration follow through on its commitment and include retirement of PSEG Hudson and Mercer in the final 2015 Energy Master Plan.**

In spite of a new $845 million natural gas plant breaking ground in 2013, there has been no effort to move toward retirement of any of the remaining coal units in the state. While natural gas is not clean, the 2011 EMP clearly states that new natural gas plants coming online would "displace higher emitting, carbon-intensive generation"[5]. Yet the South Jersey BL England plant continues to burn coal without the necessary pollution controls. The state has repeatedly granted permit extensions for this plant to operate in violation of state and federal air quality regulations. Another extension will mean harmful pollution, putting the health of the people of South Jersey at risk. Granting another extension for BL England is clearly out of line with the objectives of the Energy Master Plan since it is an "old, dirty peaker plant". **The Sierra Club urges the Administration to reject any application for a BL England permit extension.** Such an extension is not needed for reliability purposes even if the plant does not convert to gas, because PJM is in the process of implementing transmission upgrades that would address all the reliability concerns it identified when it modeled the plant's retirement.

III. Promote a diverse portfolio of new, clean in-state generation.

The development of new and clean in-state generation should focus on advancing solar and wind energy. New Jersey has made great strides in the development of solar energy and the state currently ranks 3rd in the nation for installed solar capacity[6]. Smart policies put in place to jumpstart the industry have helped New Jersey achieve its solar energy targets. Accelerating the solar RPS, one of the EMP's programmatic recommendations, stabilized the market and was instrumental in the solar industry's

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[4] Molina, 2014, The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs, ACEEE Report #U1402.
[5] http://nj.gov/emp/docs/pdf/2011_Final_Energy_Master_Plan.pdf
[6] http://www.seia.org/state-solar-policy/New-Jersey

continued advancement in New Jersey. State programs like New Jersey's Solar Renewable Energy Credit as well as the federal tax credit have helped drive down the cost of solar. The cost of solar PV has declined 75% since 2009 and is projected to continue on a downward trajectory[7].

It is time for New Jersey to follow its own lead on solar by meeting the Energy Master Plan's goal for advancing offshore wind. The Plan specifically calls for "maintaining support for offshore wind"; however, BPU has done very little to follow through on that. BPU has not released the financing regulations to establish a funding source and has consistently rejected the Fisherman's Energy pilot project. The wind developers that would be investing in New Jersey's offshore potential, are in fact, investing in Rhode Island and construction has begun on the nation's first offshore wind farm. There remains significant opportunity for offshore wind development in New Jersey but without BPU action, offshore wind is at a standstill. **The Sierra Club urges BPU to release the financing regulations for the Offshore Renewable Energy Credit program to add offshore wind to New Jersey's energy portfolio.**

IV. Reward Energy Efficiency and Energy Conservation and Reduce Peak Demand.

New Jersey needs a statewide policy framework for rewarding energy efficiency and reducing demand. Any incentives currently offered for efficiency are done in a piecemeal fashion that does not sufficiently encourage utility investments in energy efficiency. In addition, the current ratemaking structure in New Jersey creates a barrier to utility-led efficiency programs. It creates a throughput incentive for the utilities to sell more energy because their revenue is contingent on energy sales. Thus, the utilities have a disincentive to invest in energy efficiency because it reduces energy sales and revenue. Removing this disincentive eliminates the financial barrier to utility investments in energy efficiency.

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[7] http://www.irena.org/DocumentDownloads/Publications/IRENA_RE_Power_Costs_2014_report.pdf

Utilities' unique ability to directly manage load puts them in the best position to be the primary purveyors of energy efficiency. Some of New Jersey's utilities are already investing in energy efficiency because of the incentives they have been able to negotiate with BPU. However, these incentives are awarded on filing-by-filing basis which is insufficient to encourage the efficiency investments that will have the greatest impact on energy demand. In order for all the state's utilities to maximize their energy efficiency investments there needs to be a framework in place that rewards reducing energy demand. **The Sierra Club encourages BPU to begin the regulatory process to establish such a framework in order to fulfill the goals of the 2011 EMP.**

V. Promote Cost Effective Conservation and Energy Efficiency

The 2011 EMP abandoned the 20% energy efficiency goal that was a centerpiece of that Plan. This sent a clear message that promoting cost-effective energy efficiency was not a priority for this administration. The 2011 EMP does, include a goal of 17% energy reduction by 2020 relative to PJM's 2011 demand forecast as compared to business as usual, but New Jersey is nowhere near meeting even this reduced goal. In 2012 BPU commissioned a study by Enernoc, the findings of which indicate that the achievable high potential for electric energy savings was 1.2% per year by 2013[8]. Enernoc also found that cumulatively, the achievable high potential for electric energy savings by the year 2016 is 5.9%. In contrast, the actual savings New Jersey achieved has been approximately 0.5% per year[9] with relatively little change in that number. This is in part due to the hundreds of millions of dollars in clean energy funding that has been diverted by this administration. Without policies to promote energy efficiency and secure the necessary funding, New Jersey will not meet even half of its potential for savings.

Sierra Club has consistently advocated for binding, long-term, fully-funded energy savings targets to be implemented by the utilities -- also known as an Energy Efficiency

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[8] http://www.njcleanenergy.com/files/file/Library/NJ_Potential_Final_Report-Vol_1-Exec-Summary_2012-10-17.pdf

[9] http://database.aceee.org/sites/default/files/docs/spending-savings-tables.pdf

Resource/Portfolio Standard (EERS). An EERS would create a regulatory framework for achieving ambitious energy savings and lowering costs per unit of savings. Further, an EERS would protect the state energy savings programs from the annual budgetary lapses that have made New Jersey fall behind other states on energy savings every year for six consecutive years[10].

The adoption of an EERS and development of robust energy efficiency programs can dramatically lower energy bills, benefiting billpayers and helping New Jersey businesses compete. Energy efficiency is always the least cost resource and at $28 per MW, the levelized cost of energy efficiency is one-half to one-third less than new generation[11]. Energy efficiency has already caused grid-operator PJM to re-evaluate its demand forecasts, which it uses to determine the amount of generating capacity to procure.[12] As of this writing, PJM is on track to reduce its projected capacity requirement for 2016 by about 5 GW, negating the need for about 10 average sized power plants. The resulting savings for consumers should be significant, projected by market analyst UBS to be about $40/MW-day in the PJM capacity market.[13] In context, this would be enough to almost completely offset the recently increased costs brought about by PJM's new Capacity Performance criteria, which were approved by FERC this summer over opposition from the BPU and NJ Ratepayer Advocate and were projected to cost about $6.4 billion over a four year span.[14]

In addition, by lowering energy demand, an EERS can reduce New Jersey's reliance on out-of-state generation and relocate money and jobs back to New Jersey. **In order to truly promote cost effective energy efficiency, the Sierra Club urges BPU to move forward with proceedings to establish an EERS in New Jersey.**

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[10] 2014 ACEEE State Scorecard Fact Sheet for NJ,http://aceee.org/files/pdf/state-sheet/new-jersey.pdf

[11] http://aceee.org/files/proceedings/2014/data/papers/8-1233.pdf

[12] Load Forecast Update presentation to PJM Planning Committee, 7/9/2015: http://pjm.com/~/media/committees-groups/committees/pc/20150709/20150709-item-13-load-forecast-update.ashx

[13] Julien Dumoulin-Smith, 7/17/15, UBS Global Research Report "Taking a Load Off at PJM" https://neo.ubs.com/shared/d1TYx9uqMb/

[14] http://www.njspotlight.com/stories/14/11/25/bpu-opposes-proposal-from-grid-operator-fearing-spike-in-power-prices/

August 24, 2015

DELIVERED VIA ELECTRONIC MAIL:
Irene Kim Asbury
Secretary of the Board
New Jersey Board of Public Utilities
44 South Clinton Street
Trenton, NJ 08625
EMPUpdate@bpu.state.nj.us

Re: Comments on Energy Master Plan

Dear Ms. Asbury:

I am writing to you today on behalf of PennEast Pipeline Company, LLC ("PennEast") and respectfully submit these comments regarding New Jersey's Energy Master Plan (EMP).

As background, PennEast as proposed is an approximately 114-mile, 36-inch, underground natural gas pipeline that will deliver approximately 1 billion cubic feet (Bcf) of natural gas per day to families and businesses throughout New Jersey and is being designed to accommodate future energy needs within the region. The pipeline shippers include New Jersey Natural Gas Company, Pivotal Utility Holdings (d/b/a Elizabethtown Gas Company), PSEG Power, and South Jersey Gas Company, four of the largest utilities in the state of New Jersey. PennEast is a unique partnership of five retail energy providers including four affiliates of the utilities named above, UGI Energy Services, LLC and an interstate pipeline company, Spectra Energy Partners.

PennEast, its partner companies and shippers believe it is crucial to expand pipeline infrastructure in Southeast Pennsylvania and New Jersey to ease existing bottlenecks and meet growing energy needs in order to provide these areas direct access to abundant and local supplies of safe, reliable, clean and affordable natural gas.

Growing Demand for Natural Gas Infrastructure

The PennEast partners understand the benefits of bringing local gas supplies to the region, as they and their companies directly serve markets in New Jersey, Pennsylvania and also New York. PennEast is being built to produce long-term annual savings by reducing electric and natural gas costs for households and businesses. The availability of affordable energy will make our region more attractive to energy-intensive businesses and their well-paying jobs. Lower energy costs also will increase every family's disposable income and every business owner's operating budget.

A March Concentric Energy Advisors' analysis commissioned by PennEast confirms that electric and gas customers in New Jersey and eastern Pennsylvania are missing a prime opportunity to save hundreds of millions on energy costs annually; however, the reduced cost benefits of local gas can only be realized if the infrastructure is in place to allow this gas to move to market. Using as a base the most recent winter preceding the study, 2013 and 2014, Concentric focused on four primary

areas of potential savings associated with additional pipeline infrastructure and lower market area natural gas prices:

- Savings that could be achieved by electric consumers when natural gas-fired generation resources set the electric energy price based on lower market area natural gas prices ("Gas-Fired Generation Savings")
- Savings that could be achieved by electric consumers when natural gas-fired generation resources could displace less efficient and more costly oil-fired generating resources, and set the electric energy price based on lower market area natural gas prices ("Oil-Fired Generation Displacement Savings")
- Savings that could be achieved by industrial natural gas consumers that are purchasing natural gas supplies at lower market area natural gas prices ("Industrial Transport Customer Savings")
- Savings that could be achieved by local distribution company (LDC) customers when LDCs have the opportunity to purchase more natural gas supplies from lower-cost, local Marcellus Shale production as opposed to often higher-cost Gulf Coast production ("LDC Gas Supply Savings").

Based on its analysis, and as summarized in Table 1, Concentric estimates that energy consumers in New Jersey and eastern Pennsylvania could have saved more than $890 million in the winter of 2013/2014 had an additional 1 Bcf/d of pipeline capacity been available. (http://penneastpipeline.com/economic-impact/).

In a separate study, Drexel University, and Econsult Solutions, concluded that every $10 million in annual energy savings produces a $13 million annual benefit to consumers. (http://penneastpipeline.com/economic-impact/).

The complete Concentric Report is attached and incorporated by reference.

Creating a Diversified Supply

The primary source of gas supply historically has been the U.S. Gulf Coast. During hurricanes and periods of prolonged cold weather in the Gulf Coast, it is not uncommon for Gulf Coast gas supplies to be interrupted, driving up the cost of natural gas. The additional pipeline proposed by PennEast and the access it provides to local natural gas sources strengthens supply diversity, helping to stabilize natural gas prices.

Conclusion

The PennEast is dedicated to investing in infrastructure that meets New Jersey's growing energy needs and provides clean, safe, reliable and affordable natural gas to families and businesses throughout the state. We appreciate your consideration of our comments and look forward to working with the BPU to strengthen the EMP.

Sincerely,

Peter Terranova
Chairman, PennEast Pipeline Company, LLC Board of Managers

Enclosure

New Jersey Business & Industry Association

NJBIA

Melanie Willoughby
Chief Government Affairs Officer

Frank Robinson
Vice President
Government Affairs & Grassroots

Mary Beaumont
Vice President
Health & Legal Affairs

Sara Bluhm
Vice President
Environment, Energy & Federal Affairs

Stefanie Riehl
Vice President
Employment & Labor Policy

Andrew Musick
Director
Taxation & Economic Development

Tyler Seville
Associate Director
Education & Workforce Development

TO: President Mroz, Commissioners Fiordaliso, Holden, Solomon and Chivukula

FR: Sara Bluhm

DATE: August 24, 2015

RE: ***Update to the 2011 Energy Master Plan Comments***

The New Jersey Business & Industry Association (NJBIA) on behalf of our 20,000 members appreciates the opportunity to submit written comments on the update to the 2011 Energy Master Plan (EMP). We applaud and support the Energy Master Plan's number one goal of lowering the cost of energy for ratepayers.

NJBIA has been an active player in the energy policy debate for many years now. We appreciate the opportunity to offer our thoughts on the update to the plan. Commercial and Industrial (C&I) ratepayers consume 64 percent of the state's electricity and have a vested interest in seeing several changes to the status quo including a reexamination of how energy efficiency and renewable ratepayer dollars are allocated, revisiting the Societal Benefits Charge (SBC), and looking to provide for resiliency now and in the future. Through roundtable discussions with our members we offer the following comments:

The Association is committed to finding solutions to invest in our infrastructure while balancing the impacts to ratepayers. We recognize that an aging infrastructure impacts our competitive position and there is a need for a long term strategy to address how to modernize it. That being said each utility sector should not be looked at within a silo. NJBIA feels that there is a need for comprehensive asset management, planning and coordination to provide for an upgraded system, efficiencies and savings for ratepayers.

The state needs to think beyond a short term horizon and attempt a long range plan that extends 10, 20 even 30 years in order to plan for these upgrades and associated costs. The Association is committed to working with the BPU and other stakeholders to achieve this long term strategy. We recognize there needs to be a discussion with regulated utilities in the future and how they factor into any plan.

We also recognize that there needs to be a balance. New Jersey ratepayers have been paying Societal Benefits Charges for over a decade and the Clean Energy Program has not been fully utilized. In order to offset other investments in the system we need to reduce the SBC to help alleviate cost increases on ratepayers.

In terms of the electric sector, the state must also acknowledge that there are many policy impacts that are beyond the state's control but will ultimately impact our energy future. These range from PJM and the Federal Energy Regulatory Commission (FERC) to the EPA's Clean Power Plan. There are national policies that are changing the entire electric market system. New Jersey ratepayers are at the mercy of regional and national policy decisions that impact our reliability, capacity, and generation markets. It is important to

factor these decisions into a state plan as they have the potential to drive some of our actions as well as our rates. That being said NJBIA remains opposed to the state joining RGGI and encourages that we do not rejoin the effort.

As the state moves forward, New Jersey needs to reaffirm its commitment to nuclear power and recognize the baseload, carbon free power that is derived from our instate facilities. Business relies on baseload power to fuel our economy. Renewables and other sources of generation need to be considered as part of the fuel diversity but at 52 percent nuclear is our dominant source. With the anticipated closure of Oyster Creek, New Jersey will lose 7 percent of it's instate generated electricity and needs to replace that with reliable, clean energy sources. Any further expansion of renewables subsidized by ratepayers must undergo a net benefits test.

In developing plans for resiliency, NJBIA acknowledges the role of back up generation as well. Our members have discussed the importance of "islanding" private as well as public areas. For instance a hotel may be as valuable as a school for providing shelter, while a grocery store that has food is necessary for all, and an office park can help get people back to work sooner. We do need to take steps to insure public and worker safety in these situations, so adequate consideration of how far the island extends must be done.

Yet one of the issues that was raised by our members was that the benefits of back-up generation and/or CHP are not always understood by the business ratepayer. NJBIA successfully advocated for the creation of the Office of the Business Ombudsperson. This office could be expanded to offer educational materials to show the business case for how onsite generation can help manage energy costs and resiliency during potential outages. For example, a commercial office space could be educated on how having a generator allows for a quicker opening of the building for tenants or participation in demand side management programs.

Another area to improve the educational process is within the Clean Energy Program, especially in light of federal regulations. An examination of how the Clean Energy Program could target segments of the economy to participate in these programs and then customized outreach would be beneficial. Our Association has started to tackle the problem of commercial office parks and energy efficiency as an example. If materials were developed for the broker community, a real estate agent might understand how to factor efficiency upgrades into a lease. NJIT has already developed a toolkit for leased space; we recommend that the Clean Energy Program could customize and license it for use in New Jersey. The BPU needs to make it accessible and easy for a business to get to a decision point. We need to start making the linkages so people can make the connections in their business.

NJBIA had advocated for increased incentives for restaurant equipment following Super storm Sandy and the Clean Energy Program enacted these changes. Now it is time to see what other areas we can update and where we can cut down on the red tape. If we built in a program for opportunistic retrofitting the state could help businesses plan for normal O&M expenses. For example, if there is an approved list of items that qualify for a rebate, is there a way to submit receipts afterwards and receive the credit. If a chiller needs to be replaced, the Clean Energy Program could pay the difference for the purchase of a more efficient model and the process is simple.

The state also needs to look at ways to incentivize behavior. Recommended steps include: Develop a Top 5 list for business of things they should do in energy efficiency because they pay back. Creating a reward system for energy savings that is something as simple as a certificate or an award with public recognition can go a long way. There are also opportunities to team up with others. NJBIA, NJBPU and USEPA previously partnered on the Energy Star Commercial Challenge. This is an area where we could partner again or expand to other Energy Star offerings. In terms of state programs, is there a way to include BPU incentives such as CHP or energy efficiencies into an economic growth incentive? For example, a company can receive X amount for retaining jobs in state and Y amount to retrofit their building to be more efficient.

Transportation remains the largest source of greenhouse gases in New Jersey. This is an area that the EMP can address through the encouragement of alternative fuel vehicles. For corporate fleets, natural gas is the best option currently. Opening up incentives through Clean Energy to allow for retrofitting of fleets or the installation of filling stations would help to encourage the change out.

NJBIA appreciates the opportunity to share these ideas with the Board and we look forward to collaborating with you to build a better New Jersey.

COVANTA

Powering Today. Protecting Tomorrow.

Scott Henderson
Director, Government Relations

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August 24, 2015

EMP Update
Board Secretary
PO Box 44 S. Clinton Ave
Trenton, NJ 08625

Thank you for this opportunity to submit comments on the 2011 Energy Master Plan update.

Covanta, headquartered in Morristown, NJ, is internationally recognized as the leading owner and operator of large scale energy-from-waste (EfW) facilities, providing communities with an environmentally sound solution to their solid waste disposal needs by using municipal solid waste to generate clean, renewable energy. Covanta has been recognized with over 150 awards for its operational excellence in both safety and environmental programs.

Covanta employs over 3000 employees to operate more than 40 Energy-from-Waste facilities, in the United States, Asia and Europe. In New Jersey, Covanta employs over 500 people and operates four of the five Energy-from-Waste facilities in New Jersey in Essex, Union, Camden and Warren counties, generating over 150 MW of renewable power and processing 5,690 tons per day of waste.

An integrated solid waste system—including Energy-from-Waste—should play a more prominent role in achieving New Jersey's goals to increase renewable energy and reduce greenhouse gases while creating high paying jobs.

Every year, nearly 4.4 million tons of New Jersey's trash is sent to landfills, with very little, energy or materials recovery. There are two choices when communities dispose of the waste left over after recycling: landfill or recover energy. Today, 75% of New Jersey waste is sent to landfills because currently, policies have continued to disadvantage Energy-from-Waste by rewarding landfills, the inferior technology. Regional states and most parts of the industrial world have begun to take a new view of non-recycled trash: they view it as a resource.

Energy-from-Waste is a proven technology that converts municipal solid waste into baseload energy. There are currently 84 such facilities operating in the United States including five in New Jersey.

EfW is widely recognized internationally, including by the US EPA, EU, the IPCC, and the UN as a source of GHG mitigation. According to the U.S. EPA, EfW reduces GHG emissions by approximately one ton of carbon dioxide equivalents (CO_2e) for every ton of waste processed relative to landfilling, based on national averages. These reductions result from prevention of uncollected fugitive emissions of landfill methane, a GHG 34 times as potent as carbon dioxide over 100 years; avoiding fossil fuel combustion associated with grid electrical production; and the recovery of ferrous and non-ferrous metals for recycling, which reduces the greenhouse gas emissions associated with the production of these metals from raw materials.

In fact just this month, the US EPA released its new Clean Power Plant rule and it includes Energy-from-Waste as a mitigation tool that states can take advantage of to meet the new strict requirements.

As an economic driver, the construction of one 1500 ton a day energy-from-waste facility can create nearly $1 billion worth of economic activity, create approximately 250 direct construction jobs during the three year construction period. There would be approximately 110 direct and indirect jobs when the facility is operational, and one facility can offset the need for approximately 500,000 barrels of oil a year.

Energy-from-Waste can help New Jersey produce renewable energy 24 hours a day, 7 days a week near the source of consumption, create new, high-paying jobs, all while reducing greenhouse gas emissions and land consumption.

We look forward to continuing to work with the Administration on these important issues. Please feel free to contact me at you have any questions.

Sincerely,

Scott Henderson
Director, Government Relations

NEW JERSEY
AMERICAN WATER

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August 24, 2015

VIA ELECTRONIC MAIL

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RE: Update to the 2011 Energy Master Plan

Dear Secretary Asbury:

Please accept this letter on behalf of New Jersey American Water Company, Inc. ("NJAWC" or the "Company") in response to the request of the Board of Public Utilities ("Board" or "BPU") for comments on the New Jersey Energy Master Plan ("EMP"). NJAWC serves approximately 613,000 water and public fire service customers and approximately 36,000 wastewater customers in 216 municipalities and 18 counties in New Jersey. NJAWC is a subsidiary of American Water Works Company, Inc. ("American Water"). Founded in 1886, American Water is the largest and most geographically diverse publicly traded U.S. water and wastewater utility company. With headquarters in Voorhees, N.J., the company employs 6,800 dedicated professionals who provide regulated and market-based drinking water, wastewater and other related services to an estimated 15 million people in 47 states and Ontario, Canada. NJAWC supports and joins with the comments filed by the New Jersey Utilities Association ("NJUA"). We appreciate the opportunity to offer comments on the EMP, and we respectfully request that the Board consider the following:

Energy/Water Nexus

The electric and water sectors intersect at critical "nexus" points and are highly interdependent. In fact, 2 to 4 percent of total US electricity consumption is for moving and treating water and wastewater.[1] The EPA estimates that water and wastewater utilities are typically the largest consumers of energy in

[1] 4% of total energy consumption has an estimated cost of $4 billion, equivalent to 187.4MWh per year.

municipalities, often accounting for 30-40% of the total energy consumed. And an even greater piece of the energy pie comes into play when the end users' water-related energy consumption is considered – such as the energy used to move, heat, and cool water in U.S. homes and businesses. This was reported as 12.6% of our nation's primary energy consumption in 2010, or roughly equivalent to the amount of energy consumed by 40 million Americans.[2] At the same time, the production of electricity uses more than four times the amount of water consumed by all US residences; over 59 trillion gallons per year. Clearly, efficiency efforts in one sector can and will have a significant impact on the other sector.

Efforts by the water industry to reduce water use and increase water efficiency will lower the sector's energy demands and can considerably impact energy use in homes and businesses. However, under most water utility rate structures, there are no water efficiency incentives, as the recovery of fixed costs is dependent on the volume of water sold. American Water supports finding solutions to this conundrum.

Likewise, considerable energy efficiency opportunities exist in the water and wastewater utility sector. Two of the best examples are pump efficiency and wastewater aeration. For example, American Water is improving the efficiency of its water pumps, installing and upgrading to premium efficiency motors across its enterprise; from 2011 to 2013, American Water completed 52 pump refurbishments / replacements, at a cost of approximately $6 million, and yielding an estimated energy reduction of 8 million kWh per year. Programs that encourage these types of investments can further make considerable energy impacts in New Jersey.

Critical Infrastructure Resiliency and Reliability

NJAWC supports the comments of the NJUA regarding energy distribution system infrastructure reliability and protecting critical energy infrastructure. NJAWC notes that, as discussed above, the electric and water sectors intersect at critical "nexus" points and are highly interdependent. The EMP would be incomplete if it did not take into account the role of the water distribution system in electric generation. For companies like NJAWC, critical assets like regional water treatment plants and major transmission mains are exposed to direct threats such as severe weather, physical sabotage and cyber-attacks, but also to indirect threats such as widespread power outages, train derailments or catastrophic environmental contamination. The Board recognized this interdependence when it issued its March 20, 2013 Order inviting "all regulated utilities subject to Board jurisdiction...to submit detailed proposals for infrastructure upgrades designed to protect the State's utility infrastructure from future Major Storm Events..."[3] NJAWC submitted its own critical asset hardening proposal and looks forward to working with the BPU Staff to implement its proposal later this year.

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[2] Congressional Research Service, Energy-Water Nexus: The Water Sector's Energy Use, 2014.

[3] I/M/O the Board's Establishment of a Generic Proceeding to Review Costs, Benefits and Reliability Impacts of Major Storm Event Mitigation Efforts, Docket No. AX13030197.

NJAWC joins NJUA in recommending that "the EMP encourage the BPU to consider, where appropriate and with utility input, implementation of innovative cost recovery mechanisms for infrastructure investment that allow the utility timely recovery of investments as they are made."[4] NJAWC notes that the recently established DSIC mechanism has so far been successful in assisting the regulated water utilities in upgrading critical water distribution system infrastructure. NJAWC would also respectfully request the Board to consider the implementation of a DSIC-like mechanism for qualifying critical sewer utility infrastructure for the same reasons that a DSIC has been implemented for the qualifying water utility infrastructure. Other rate adjustment mechanisms, such as trackers, riders, or specific infrastructure investment clauses can be targeted and tailored to provide ample customer protections while directing scarce capital resources to those projects which provide the state and its critical infrastructure the most "bang for its buck." Given the energy/water nexus that is such a prominent part of our overall utility backbone, policy makers and regulators should make the rate adjustment mechanisms that already exist or are under consideration for the electric and gas utilities available to water and wastewater utilities.

Energy Efficiency

As noted above, the energy/water nexus offers New Jersey numerous benefits, particularly given the relatively large proportion of water supply managed by BPU-regulated water utilities. Foremost among these opportunities is the potential for policy makers and regulators to leverage the many energy efficiency gains being made by water companies. For example, under the EPA's recently released Clean Power Plan ("CPP"), New Jersey will be able to tap into the energy efficiency gains being made by NJAWC and other water utilities to meet its state carbon goals. NJAWC recommends that the EMP operationalize these gains by ensuring that New Jersey's CPP "state plan" is built in a way that captures the energy efficiency measures by water companies and the renewable energy installations at their facilities.

Leak Detection

Leak detection is an important component of water and energy efficiency; reducing lost and unaccounted-for water can translate into substantial power, fuel and chemical savings for the water industry, which are passed on to customers, while helping to reduce the amount of electricity needed to supply water throughout the distribution system. Currently, NJAWC utilizes both fixed and portable leak detection equipment for identifying pipeline leaks and break locations. Portable units can help identify leak locations within feet, which results in reduced excavation cost vs. the old way of digging where the leak surfaces. Permanent leak monitoring and ongoing leak surveys are proactive methods of reducing unaccounted for water. NJAWC is exploring deployment of fixed leak detection systems in areas that have a history of high unaccounted for water in order to have an early warning system to locate and fix leaks/breaks before they result in larger, more costly leaks or breaks. The benefits for our customers include:

- quicker response time to leaks and breaks (many times the leak is identified prior to surfacing);

[4] August 13, 2015 letter from NJUA, page 2.

- lower cost of repair – smaller leaks have a smaller excavation and surface restoration cost vs. larger breaks;
- reduced unaccounted for water – more water will be provided directly to customers vs leakage;
- reduced pumping costs;
- safer pipeline systems – advance warning results in quicker repairs [e.g., no icing from surfacing leaks, less damage to other utilities (gas)];
- increase in the number of leaks found – reduced lag in reporting;
- fewer customer calls and complaints; and
- reduced number of one-off leak surveys (snapshots only – must be performed every few years)

Leak detection is, of course, a significant element of any water conservation program, but it is by no means a panacea for water supply challenges. Water conservation programs, including efforts to manage summer irrigation loads, can help the water industry manage peak demands, which also reduces the pressure on the electric industry to supply electricity through peaking plants and transmission constraints. While there are substantial benefits to customers from enhanced conservation programs in both the water and energy industries, NJAWC shares the reservations expressed by NJUA in its comments. Water conservation and increased energy efficiency can have unintended, negative consequences for utilities if policy makers and regulators are not open to innovative ratemaking concepts. Under traditional utility regulation, there are inherent financial disincentives for utilities to promote conservation and energy efficiency, given the interaction between lost sales and the traditional rate structures and investment recovery methods. The EMP should recognize the need for, and encourage the BPU to pursue, the appropriate rate setting policies and methods so as to provide the appropriate incentives for utility participation in and support of conservation and energy efficiency.

Renewable Energy

NJAWC's sister utility, New York American Water, is currently piloting a geothermal heating and cooling system in an elementary school in Valley Stream, New York. Although geothermal technology has been in use for decades, this implementation of geothermal is unique: NYAW pumps water from the mains in its distribution system through a heat exchange unit within the school to heat and cool the building. (The school, housed in an older building, was retrofitted with the necessary equipment.) The pilot will further examine returning the water to the distribution system. This geothermal system differs from traditional "closed loop systems" that require drilling 100 or more bore holes to depths ranging from 250 to 300 feet. Instead, water for the heating and cooling system is drawn from the water main, resulting in a more space-efficient, expedient, and cost-effective installation. It is also an entirely renewable energy alternative that does not require the burning of fossil fuels to operate.

The installation of the geothermal heating and cooling system has enabled this elementary school to provide a more comfortable learning environment for its faculty and students. Temperatures can be customized for individual classrooms, which school support staff manage through a computer based program.

While the pilot is still ongoing and information continues to be gathered and analyzed, it is anticipated that the school will experience reduced operating costs through lower electric bills and the elimination of the use of fossil fuels. In addition, the school is now used year-round for an array of programs that benefit the children and community of this district. If successful and replicated, such realized savings in a school district could be applied to fund enhanced or additional school offerings.

NJAWC respectfully encourages the Board to examine this unique geothermal heating and cooling technology, and to include in the EMP a policy that supports its application.

NJAWC was also a pioneer in the use of solar at its operating centers, including a floating solar array at its Canoe Brook water treatment plant in Short Hills and a large array at its Canal Road water treatment plant. At the time it was constructed, the Canal Road installation was the largest solar array east of the Mississippi River. The Canoe Brook floating array was designed to generate 135 kilowatts of power, or two percent of the water treatment plant's needs. The Canal Road installation generates nearly 20% of that plant's energy needs. The Company will continue to support the EMP policy initiatives in this regard wherever appropriate to do so.

Conclusion

In conclusion, we appreciate the opportunity to work with the Board on the EMP and look forward to further constructive dialogue on the many policy issues raised therein.

Respectfully,

/s/ *Robert J. Brabston*

Robert J. Brabston

RJB:dlc

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J.E. "JEN" BENTON, Executive Director
S.J. ROSS, Associate Director

August 24, 2015

Irene Kim Asbury
Board Secretary, NJ Board of Public Utilities
44 South Clinton Avenue
Trenton, NJ 08625

RE: Comments on 2015 Update to the NJ 2011 Energy Master Plan

Dear Ms. Asbury:

The New Jersey Petroleum Council (NJPC), a division of the American Petroleum Institute, has a long history of representing the petroleum and gas industry in this State. We engage in many facets of this worldwide industry, including refining, transportation, research, development, and marketing of fuels. It is a privilege to offer the comments below on the 2015 Update to the NJ 2011 Energy Master Plan (EMP).

Energy from all sources will be required to realize a secure energy future for New Jersey, its businesses, and for America. The keystone of any workable energy strategy will be responsible diversification of the nation's energy supplies- allowing consumer demand and the market to integrate alternatives and new fuels into the energy landscape without government mandates that jeopardize the larger goal of sufficient, reliable supplies.

Since the last NJ EMP, the United States has enjoyed a renaissance in energy production, establishing the United States as the world's leading oil producer. Experts are calling the Marcellus Shale region that encompasses Pennsylvania, New York and West Virginia a "100-year supply of natural gas". Recent technologies within the oil and natural gas industry have made it possible to extract this once unavailable resource in a reliable, secure and environmentally safe way. Having this supply, literally across the Delaware River, will only enhance our future domestic energy supply, both for New Jersey and the United States.

NJPC continues to advocate for the expansion of natural gas pipeline transmission system. This expansion, through both interstate and intrastate projects, will lower rates and ensure service reliability. Further, we are joined by families across America who support expanding America's vital infrastructure. A December poll by Harris Interactive revealed that 93 percent of registered voters agree that increased development of energy infrastructure would help create jobs, while 89 percent agree that infrastructure investment would strengthen America's energy security.

NJPC has worked diligently to participate in efforts to enhance our State's security, and serves as an industry leader in the field of safety and security. Working through the New Jersey Department of Homeland Security, we have further responded to the challenge of anticipating

hurricanes striking the New Jersey coast, participating in conferences and seminars designed to build a thorough base of understanding of emergency response.

New Jersey is 47th in the nation in terms of geographic size, yet the state ranks 13th in its total energy use. New Jersey currently has three nuclear power plants, four fully operable oil and gas refineries and over 3600 retail gasoline stations. Overall, the energy industry employs more than 30,000 people in New Jersey.

Let's begin by taking a look at some quick facts with regard to the presence of the petroleum industry in New Jersey:

- New Jersey is home to the 6th largest refining capacity in the nation, trailing nearby Pennsylvania by a small margin.

- In Northern New Jersey, between New York and New Jersey, there are over 40 million barrels of refined product storage capacity, most of which is in New Jersey making it the largest petroleum product hub in the United States.

- This area is also home to the New York Mercantile Exchange which acts as the regional exchange for petroleum products where extensive trading establishes the East Coast benchmark for product prices.

- The largest of the 4 United States federal mandated heating oil reserves is located in New Jersey.

- The New Jersey refineries located along the Delaware River are part of the nation's largest petroleum complex on the East Coast.

- New Jersey presently has 3 fully operating refineries, 1 currently not operating and 1 asphalt refining plant.

- New Jersey is home to a sophisticated network of liquid pipelines. One, the Colonial Pipeline, comes from Houston, Texas to its northern terminus in Linden, New Jersey, and supplies product directly from the Gulf Coast.

- New Jersey presently has over 3600 service stations throughout the State and on an average day dispenses almost 11 million gallons of motor fuel to those that reside, work and travel through New Jersey.

- New Jersey has the third lowest motor fuel tax in the nation, at 14.5 cents per gallon, and nearby states such as New York and Connecticut rank among the highest in the nation.

- Despite the fact that self-service was originally introduced here in the early 1950's, New Jersey remains the only state nationally that requires attended service in dispensing gasoline.

Let's turn to the product picture. Simply stated, our products continue to evolve and improve-it is not the same old gasoline or diesel fuel-there are a new generation of fuels to compete as the fuels of the future. New Jersey energy policy should continue to adhere to following a federal motor fuel standard and time schedule for planned changes rather than follow a state specific recipe or what is commonly called a "boutique fuel".

New Jersey presently requires, statewide, a gasoline known as Federal Reformulated Gasoline Phase II that reduces mobile source emissions in what is the cleanest gasoline permitted under federal law. Recently, that requirement included an advanced reduction in sulfur in gasoline which represents yet another significant step in the continued fuel improvements in gasoline.

Gasoline suppliers in New Jersey use ethanol which is an oxygenate. This federal oxygenate requirement comprises approximately 10% of our state gasoline supply to help make this newer cleaner gasoline. As a result, the blend stock of gasoline has been changed to accommodate the more volatile ethanol, while continuing to meet air quality standards. The new blend stock is commonly called RBOB. (Reformulated Blendstock for Oxygen Blending)

Diesel fuel, as many are aware, has recently undergone a major transformation by removing almost 90% of sulfur from the product. This new product is called Ultra Low Sulfur Diesel (ULSD) and is presently available for highway use. The product successfully debuted a few years ago and there are Federal mandates to expand this product to off-road diesel, as well as locomotive and marine engines. It is important that New Jersey energy policy be respectful of the federal schedule for product introduction to avoid precipitating supply difficulties during any transition period. New Jersey has also seen recent regulations which call for lower sulfur levels in heating oil first in the year 2014 and again in 2016.

In summary, products are continuing to change and improve via a series of significant steps. Total combined investment for these fuel changes by US refiners approaches $17 billion, combined with the investment for all environmental improvements that approaches almost $50 billion in refining.

At the same time, US refineries continue to produce record amounts of gasoline and distillate, and continue to expand refinery capacity. New Jersey should adopt policies in the EMP to give NJ refiners the predictability they need in attracting new investment in our state's refining sector. Decisions by refiners to expand refining capacity are primarily based on business factors such as available capital, competition with other investments for funding, and return on investments which have been historically rather low. Other considerations include extensive regulatory requirements, international capacity to supply products and public acceptance. Increasing capacity at refineries can be a challenge for a number of reasons.

One would be cost. Expanding capacity at an existing refinery typically runs into hundreds of millions of dollars. If one were able to get a new refinery permitted, it could easily cost $3 billion. These are huge capital investments by any standard. Ironically, the return on capital investment for petroleum refining and marketing is historically below the average return for the Standard and Poor's Industrials.

Another is permitting. The permit process required to construct a new refinery or modify existing facilities is very complex and time consuming, involving federal, state and local permitting authorities. The combination of these regulations, reformulated fuels and reducing emissions from refinery operations make the refining industry one of the most heavily regulated industries in the United States. Yet, it is important to recognize that massive investments at refineries will be required as the industry seeks to expand refining capacity to meet demand and comply with environmental regulations.

New Jersey should adopt policies that compete to attract a share of these investment dollars to create these new fuels, retain and expand our work force, and improve our standard of living.

Experts, including the U.S. Energy Information Agency, predict that the world will require significantly more energy in the year 2030 that it did last year. Population and economic growth in developing countries will drive much of that increase, but energy demand is expected to increase in the United States as well.

In New Jersey, it is our intention to continue to advocate for sound state policies that promote opportunities for the growth of the industry here in the state. To that end, we need to attract our share of employees, engineers and marketers. We have forged academic relationships with the state's university and higher education network, directly developing specialty courses where appropriate to assist us in this mission. In addition, we have provided our universities with opportunities to develop partnerships to assist us in reviewing potential energy strategies.

In looking to the future, we anticipate New Jersey as an attractive location for investment in alternative energy sources, natural gas (compressed or liquefied), as an appropriate place for new bio-fuels, the challenges of investing in solar and wind technology, as well as improving or expanding our existing co-generation, and the research and development of improved vehicle technologies all remain viable possibilities for an enhanced energy future.

The petroleum industry remains committed to operating in a secure environment and participating in the development of federal and state security initiatives in the State of New Jersey to protect our work force, communities, customers and facilities.

We continue to seek timely resolutions of permits necessary to operate and continue to grow petroleum refineries in a way that mirrors sound, statewide business community initiatives. We welcome the opportunity to act, in partnership with the New Jersey Department of Environmental Protection to secure the necessary operating permits in a timely fashion. The EMP should recognize this possible bottleneck and work to advance timely resolution of these efforts.

We trust that New Jersey will continue to adopt tax policies that are based on sound principles, as well as mechanisms to discourage evasions of excise taxes.

We advocate that New Jersey encourage investment in areas that have been historic pro-growth development areas by policies intended to attract investment. As an example, an industrial node

can generate local capacity for economic development, including significant job opportunities, which often involve skilled trades and professional careers that tend to be at the higher end of the wage and benefits scale. Industrial facilities can lead to a more stable tax base and attract service and support businesses, further enhancing the community.

Benefits include effective strategic planning for municipalities and companies, comprehensive security protection, and, as we mentioned appropriate infrastructure. By locating industrial nodes in communities that sanction them, statewide land-use planning can also be more practical, in line with current land use realities and strategies. This initiative should be a cornerstone of NJ EMP policy.

Finally, we would also advocate for a commitment to improve waterway navigation as an essential part of our overall energy infrastructure. The ability to access and navigate in an environmentally appropriate and safe manner is critical to development of our shore side facilities. To ignore this need places a considerable strain on a razor tight energy transportation network.

The oil and gas industry is currently investing billions of dollars in developing new advanced energy technologies to reduce greenhouse gas emissions. In fact, the oil and natural gas industry invested more than $58 billion from 200-2008 in low- and no-carbon technologies, more than either the government or the rest of the private sector combined. These large investments are critical to provide the low carbon energy we will need years from now. These strategies include developing energy technologies and uses of clean burning natural gas. NJPC applauds the Administration's consideration of natural gas as a lynchpin to a successful State energy policy. Research and development and marketing new energy alternatives, including solar, bio-fuels, fuel cells and wind energy, as well as carbon capture technologies are on the horizon and will continue to be explored.

NJPC favors an "all of the above" approach to energy policy that will provide the security, efficiencies and, above all, reliability that the State deserves. Especially in light of the closing of our Oyster Creek nuclear facility by the end of this decade, New Jersey needs to replace that baseload power generation with a proven technology such as natural gas.

The petroleum industry, as one of New Jersey's earliest industries, has always been committed to meeting our energy needs through products, research, investments and workforce development. We share a commitment to secure New Jersey's role in meeting our future energy needs.

The ability to provide a stable supply of oil, natural gas and all forms of energy to every sector of the economy will greatly influence the future prosperity of our state. Now is a critical time for making important decisions on programs and policies needed to address New Jersey's energy demands.

A major component of any useful energy strategy entails the development of domestic U.S. resources. We agree with many people that urge States to move forward with a safe and environmentally friendly method of tapping into our United States oil and natural gas supply. The U.S. Outer Continental Shelf (OCS), federally controlled lands off the east and west coasts

and in the Eastern Gulf, is estimated to hold 77 billion barrels of oil and 420 trillion cubic feet of natural gas. These resources would be enough to heat 100 million homes for 60 years. However, the vast majority of this land remains off limits to energy exploration. As the only developed country that substantially restricts access to known domestic energy resources, we must take a realistic look at the impending long-term effects of this circumstance. Increased dependence on foreign oil is one of these very real potential effects. U.S. energy demand is not declining; and if not met by domestic sources, foreign sources will step in to fill that disparity.

New Jersey had one of the most sophisticated development proposals for offshore exploration in the late 1970's and 1980's. It was widely accepted by New Jersey policy leaders. There is no reason an ecumenical approach to resolving policy concerns cannot lead to consideration and possible development of this critical supply potential. By developing more of our own oil and natural gas resources, we can provide more domestic fuel for consumers, add to well-paying jobs, and bring much needed revenues- paid for by the investor owned exploration companies- into state and federal coffers. At a minimum, we need to encourage initiation of an inventory of resources in the OCS using technology not available when previous resource estimates were made.

As the United States looks to remove all restrictions on the export of crude oil, which will provide domestic economic benefits, enhanced energy security and flexibility in foreign diplomacy, New Jersey should position itself and its infrastructure to take full advantage of this new opportunity.

NJPC looks forward to working with you to further develop a public policy framework to ensure future energy security. We need to promote better understanding of the energy challenges we as a State face from both our elected and appointed officials. We will work to position New Jersey to enhance our energy technologies and remain on the cutting edge of advanced technology.

There is no question that our nation's economy will depend on more energy from a more diverse set of sources in the decades to come. Thoughtful consideration of how we will most effectively develop these new sources, while we continue to reliably meet growing demand, is of crucial importance to business owners, policymakers and American consumers. Vigorous deliberation will be necessary to logically align our nation's priorities and achieve this objective, and the United States and New Jersey businesses will be better for it in the years to come.

NJPC commends the Administration, in particular the NJ Board of Public Utilities, for providing an Energy Master Plan which is balanced in its approach to energy policy and for recognizing that New Jersey's manufacturing and industrial sectors, as well as its citizens, depend on secure, reliable energy to live and prosper.

Thank you for considering the views of the NJ Petroleum Council.

Sincerely,

Scott J. Ross
Associate Director

Submitted Comments Regarding NJBPU's Revision of the 2011 Energy Master Plan

Environment New Jersey
104 Bayard Street, Fl. 6
New Brunswick, NJ 08901

Irene Kim Asbury
Secretary of the Board
NJ Board of Public Utilities
44 South Clinton Ave., 9th Fl.
P.O. Box 350
Trenton, NJ 08625

Dear Ms. Asbury: August 24, 2015

Please accept these comments on behalf of Environment New Jersey, representing more than 20,000 citizen members across New Jersey, regarding NJBPU's proposed revision of the 2011 Energy Master Plan. These submitted comments will supplement and address some of our submitted oral testimony at the three BPU public hearings in Newark, Trenton and Galloway.

Thank you for the opportunity to comment, but the ability to provide substantial and targeted comments is hindered by the lack of an actual draft document to comment on. Reiterating the call of the NJ Ratepayer Advocate, we would strongly encourage the opportunity for a public comment period and hearing to allow the public to offer feedback on the revised draft document.

From accelerating sea-level rise, to stronger hurricanes, to more devastating downpours, global warming is already having an impact on New Jersey. Instead of taking action to protect New Jersey residents from worsening extreme weather events as well as protecting future generations, the proposed revisions of the Energy Master Plan fail to acknowledge the potential cataclysmic changes that climate change could wreak upon our state without further action. We are in the midst of a slow-motion crime scene and a revised Energy Master Plan cannot merely pay the risks from climate change lip service.

The revision of the Energy Master Plan is occurring on the same timeline as the U.S. Environmental Protection Agency is moving forward with the Clean Power Plan, the now finalized rule that will require New Jersey and other states to develop a strategy to clean

up global warming pollution from power plants by 2018 to reduce emissions from the power plant sector by 32 percent by 2030.

In addition, NJDEP's decision to finalize the repeal of the regulations governing the RGGI program on the same day of the finalization of the EPA Clean Power Plan is a missed opportunity for New Jersey, both in terms of the environmental and economic benefits we could be capturing – and in terms of positioning the state to successfully implement the Clean Power Plan.

Global Warming Risks New Jersey's Future

The scientific consensus on the threat posed by climate change is clear. The American Association for the Advancement of Science (AAAS) puts it this way:

1. "Climate scientists agree: climate change is happening here and now."
2. "We are at risk of pushing our climate system toward abrupt, unpredictable, and potentially irreversible changes with highly damaging impacts."
3. "The sooner we act, the lower the risk and cost. And there is much we can do."

Global warming is primarily caused by human combustion of fossil fuels, which produces carbon dioxide pollution. When carbon dioxide and other heat-trapping emissions are released into the air, they act like a blanket, holding heat in our atmosphere and warming the planet. One blanket is good... but we're heading for a 5 blanket world.

The third U.S. National Climate Assessment makes it clear that global warming is already having an impact on New Jersey:

- The average temperature in New Jersey is about 2° F warmer now than it was in the late 19th century.[1]
- Melting ice and warming oceans are causing sea levels to rise. On average, sea levels are now about a foot higher than they were 100 years ago. That made Hurricane Sandy much worse than it otherwise would have been – the risk of coastal flooding on the scale caused by Hurricane Sandy has doubled over the last 60 years.[2] (Governor Christie clearly underestimates the real connection between warming and extreme weather.)
- Warmer air holds more water vapor, which means heavier storms. Our region has experienced a greater recent increase in extreme precipitation than any other region in the United States. Between 1958 and 2010, the Northeast saw more than a 70 percent increase in the amount of precipitation falling in very heavy events.[3] These heavy storms increase the risk of flooding and infrastructure damage all across the state, as we clearly saw during Hurricane Sandy.

If we do not alter course, average temperatures in New Jersey could increase by as much as 10° F by the end of the century, and impacts will become more severe.[4] For example:

- Heat waves will become much more common, increasing the risk of heat-related illness and damaging our agriculture. The number of days above 90 degrees could

more than double by 2050, with central and southern Jersey experiencing more than 40 such days in a typical year.[5]

- The pace of future sea level rise is uncertain, but some scientists anticipate that if we do not alter course, sea levels could rise by as much as 6 feet by 2100. Sea level rise on that scale would make Sandy-scale coastal flooding an annual or bi-annual event, dramatically reshape New Jersey's coastline, and displace hundreds of thousands of people from their communities.[6]

How bad the problem gets depends on how quickly and how deeply humanity can reduce emissions of global warming pollution.

This science – and the need to act quickly to prevent the worst impacts of global warming – clearly needs to be incorporated into any revision of the 2011 Energy Master Plan. The science has become more certain and concerning and the impacts of have become alarmingly clear from the impacts of Hurricane Irene and Sandy. Climate change is not the next generation's problem – it is our problem. Our policy solutions that are part of the Energy Master Plan should reflect that reality, and not pay lip service.

Major Reductions in Global Warming Pollution Are Urgently Needed

Science is clear about what we need to do to avoid the worst consequences of global warming: stabilize worldwide emissions of the pollutants that cause global warming by the end of the decade and reduce them by more than half by mid-century.

For the United States and other developed countries, emission reductions must occur more quickly and more steeply, with reductions of 25 to 40 percent below 1990 levels by 2020 and 80 to 95 percent by 2050. Governor Corzine and New Jersey's legislative leaders were attempting to move toward these targets when they enacted the 2007 Global Warming Response Act which requires emissions reductions of 20% by 2020 and 80% by 2050. The Christie Administration touts the progress towards the 2020 goal, but fails to chart out the strategies that will put us on the path for a 80% reduction over the next 35 years.

New Jersey Helped to Create the Regional Greenhouse Gas Initiative – A Groundbreaking Program Designed to Clean Up Power Plants

One of the simplest strategies that should be incorporated into the Energy Master Plan is rejoining RGGI. It's a proven program, it's the model for EPA's Clean Power Plan and it continues to get stronger. If this Governor fails to return New Jersey to the program, which would require a massive mea culpa, certainly the next Governor --- of either party – will. The RGGI program shouldn't be dismissed, and these comments will focus on the strengths of the program, why New Jersey should rejoin and how the program meshes well with the requirements of the Clean Power Plan.

New Jersey's leaders recognized that cleaning up power plants would be an important part of meeting its climate targets. That's why New Jersey helped to create the Regional Greenhouse Gas Initiative (RGGI). The state worked with nine other northeast states

from Maryland to Maine – across geographic and partisan divides—to craft this groundbreaking program and accelerate the shift to clean energy.

The structure of RGGI is simple. States issue allowances for the right to emit carbon dioxide, the most important global warming pollutant. Power plants that emit carbon dioxide have to purchase allowances to match their emissions. Over time, the number of allowances declines, spurring utilities to reduce their emissions. At the same time, states reinvest the proceeds from auctioning allowances in clean energy improvements—from wind and solar energy facilities to building renovations that improve energy efficiency.

The program originated in 2003, when New York Governor George Pataki circulated a letter to the governors of 10 other northeastern states calling for the creation of a regional agreement to reduce global warming pollution from their states. New Jersey joined eight other states—Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New York, Rhode Island, and Vermont—to develop a cap-and-trade program for power plants. In 2005, those states, with the exception of Massachusetts, signed a memorandum of understanding that created the program. Before the first auction took place in 2008, Maryland and Massachusetts joined as participants.

By joining together, northeastern governors knew that their states could achieve greater results in the drive toward clean energy, and do so at lower cost, than they ever could ever achieve separately.

RGGI Is a Proven Success

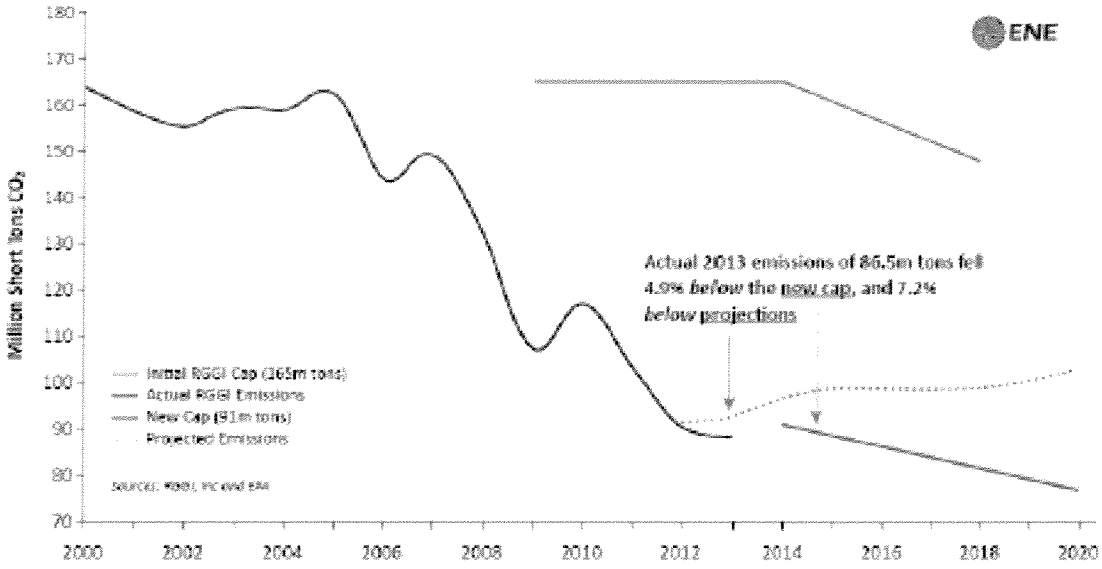
RGGI has significantly helped reduce carbon pollution, while at the same time supporting economic development, creating new jobs and saving consumers money on energy in the nine states that currently participate.

To date, the program has generated more than $1 billion in auction revenues that states have largely invested in clean energy solutions – providing significant benefits. According to a recent report by the Acadia Center and by RGGI Inc., since it launched in 2009, RGGI has already helped:

- Reduce carbon pollution by almost 30 percent;
- Cut electricity prices by 8 percent;
- Create more than 23,000 job-years of work;
- Lock in more than $1.8 billion in long-term savings on energy bills; and
- Add more than $2.4 billion in economic activity to the region.

Incredibly, pollution levels in the nine-state RGGI region is now down almost 50 percent below the original target set in 2005. (See Figure 1.) To ensure that the program remains effective, RGGI state governors agreed in February 2013 to make deeper cuts in power plant carbon emissions (represented by the green line in Figure 1). Through 2020, the new limit will prevent as much pollution as would be emitted by 16 million cars. At the same time, it will generate more than $8 billion in economic benefits, including energy bill savings, and more than 120,000 job-years of employment across the region.

Figure 1: **Pollution is down almost 50 percent from the original RGGI target.**



The Clean Power Plan Will Require Gov. Christie to Clean Up Global Warming Pollution from Power Plants

On June 2, 2014, the federal Environmental Protection Agency proposed the Clean Power Plan – a new rule to limit carbon pollution from power plants nationwide. The Clean Power Plan presents an opportunity for New Jersey to build on its past clean energy investments to transition to a modern electric system that will better serve New Jersey businesses and families. On August 3, 2015, President Obama, during a ceremony in the Rose Garden at the White House, finalized the rule saying this was a critical portion of his commitment to reduce carbon emissions and to bring a strong climate negotiating hand for this December's Paris climate negotiations. We believe that the EPA Clean Power PLan provides a powerful incentive for Gov. Christie – or more likely future gubernatorial candidates – to take a second look at RGGI.

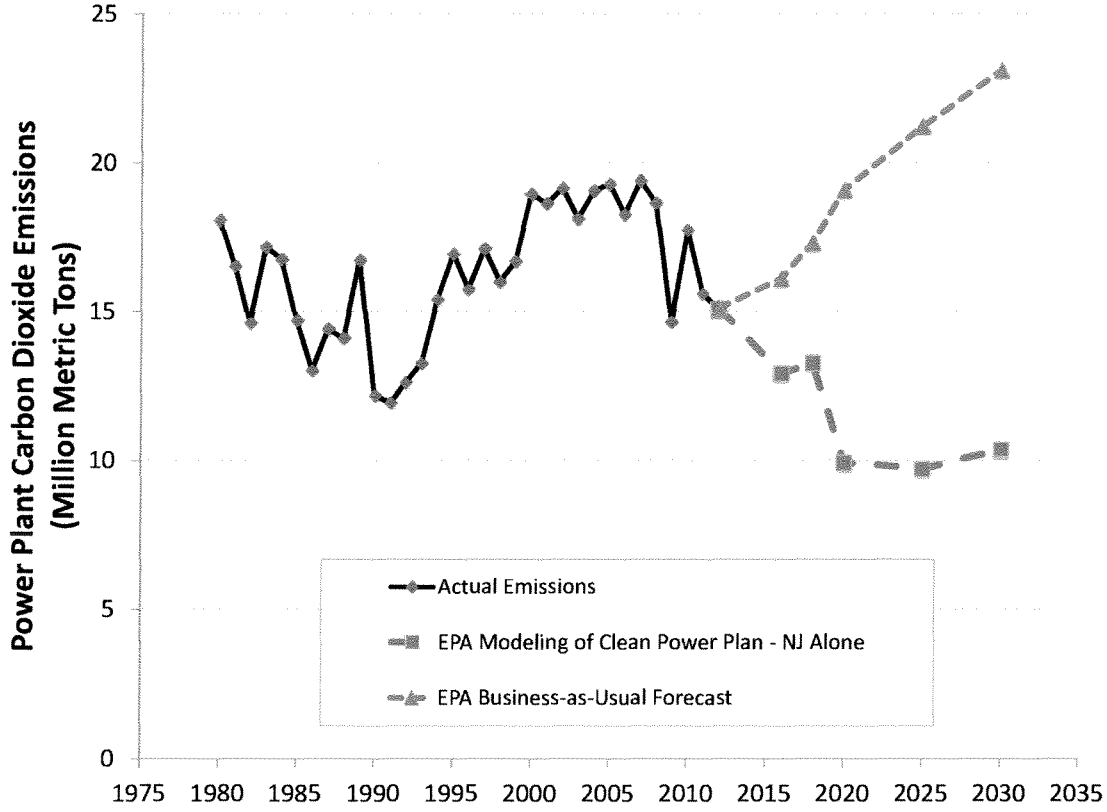
The Clean Power Plan sets targets for states to reduce carbon from their power plants by investing in renewable energy and energy efficiency, and switching to cleaner fuels. Under the Clean Power Plan, New Jersey will have an important role to play. The EPA's target for New Jersey is to reduce its carbon emissions rate—the amount of carbon emitted per unit of power—23 percent by 2030. While this is a reduction from the draft target, this is still an ambitious goal, considering the business as usual modeling scenarios.

Governor Christie and his administration has not come to grips with what the Clean Power Plan will actually mean for New Jersey. In the summer of 2014, Larry Ragonese, a

spokesman for the state Department of Environmental Protection, told the *Asbury Park Press* that "New Jersey already meets the carbon emission limits proposed by the EPA, thanks to efforts by the Christie administration and previous ones … Power plant emissions in New Jersey total 503 pounds of carbon per megawatt hour, below what he understood was the limit of 647 pounds by 2020 and 513 pounds by 2030."

However, Mr. Ragonese appears to misinterpret the requirements of the rule. EPA modeling shows that continuing under existing policy, New Jersey's power plant carbon dioxide emissions will increase by more than 50 percent from 2012 levels by 2030.[7] In contrast, if New Jersey were to go it alone under the Clean Power Plan, the state's emissions would have to decrease by 23 percent below 2012 levels by 2030.[8] The difference between those two scenarios represents a cut in emissions of more than 50 percent below business-as-usual levels. (See Figure 2.) Significant action will be required.

Figure 2: Trends in Power Plant Emissions in New Jersey since 1980, Plus EPA Modeling of the Impact of the Clean Power Plan



On EPA's anticipated timeline, New Jersey will have to develop at least a draft plan to achieve the targets set in the Clean Power Plan and submit it to EPA by September 2016. As part of the final plan, states were allowed to extend their submissions until 2018, although they will get credit for submitting plans early and not requesting additional time.

We sincerely hope New Jersey submits a realistic plan by 2016 and doesn't kick the climate can down the road to a future administration or sue EPA over the Clean Power Plan, as others states seem prepared to do. (States can get up to two additional years by working with other states to form regional compliance plans – such as RGGI.)

Rejoining RGGI is a commonsense, administratively efficient pathway for New Jersey (and other states) to comply. The infrastructure of the program is already developed, New Jersey has a history of participation and its utilities are familiar with the program, and it generates revenue that the state can use to accelerate its transition to clean energy and make the goals of the Clean Power Plan easier to achieve.

Sitting on the Sidelines of RGGI is a Missed Opportunity for New Jersey

Before Gov. Christie withdrew from RGGI, it generated $100 million for New Jersey. The governor diverted a significant fraction of that money to plug holes in the state budget, but some of it went towards advancing clean energy solutions, including solar energy and energy-efficient combined heat-and-power facilities. One of the more prominent projects funded with RGGI revenues is the solar array at William Paterson University – which will save the university $4.3 million on electricity over 15 years. The diversions did not achieve the same level of return on investment, consumer savings and economic activity for New Jerseyans, as cited in the Energy Efficiency Resource Standard petition presented to the Board of Public Utilities by the New Jersey Sierra Club.

Overall, neighboring states have generated more than $1.5 billion in revenues through RGGI, which they are largely using to advance clean energy solutions. Every RGGI dollar that states put into energy efficiency programs delivers more than $2 dollars in benefits, in addition to reducing carbon pollution – making the program a clear win-win.

Participating states, under current plans, will reap an additional $3 billion in funding – and an $8 billion boost to the regional economy – through 2020, according to the Acadia Center. New Jersey is missing out on this opportunity by sitting on the sidelines.

What a Revised Energy Master Plan Should Look Like

Every year, New Jersey power plants produce as much global warming pollution as about 3.7 million cars. Power plants rank second behind New Jersey's transportation sector as a source of global warming pollution – and ahead of homes, businesses and industry. We shouldn't be building more fossil fuel power plants in New Jersey, especially in communities like the Ironbound in Newark.

The 2011 Energy Master Plan's heavy emphasis on dirty energy, fossil fuel infrastructure and the rapid expansion of gas plants and pipelines, its dialing back of the Renewable Portfolio Standard (RPS) from 30% by 2030 to 22.5% and its outright failure to meet its own goals on off-shore wind and energy efficiency through Combined Heat and Power (CHP) all require a strongly revised plan.

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The Energy Master Plan should support the Clean Power Plan, and rejoining RGGI as a sound compliance option, should be an option recommended in the plan, disregarding Gov. Christie's continued opposition.

The Energy Master Plan should phase-out Hudson and Mercer Generating Stations, the remaining dirty coal plants in New Jersey, and accelerate the transition to a clean energy economy. Coal plants are the largest contributors to dangerous carbon pollution. Carbon pollution is linked to life-threatening air pollution, notably smog, which can trigger asthma attacks and lead to heart attacks and even premature deaths. These devastating effects also disproportionately affect low-income communities and communities of color. **Setting a goal in the Energy Master Plan to phase out use of coal-fired power plants by 2030 will help curb air pollution and boost the booming clean energy economy.**

It is clear the BPU needs to set binding energy savings goals to promote energy efficiency and hold utilities accountable for meeting these standards. **A statewide policy establishing a binding standard of 1% minimum energy savings will help secure clean energy funds and attract private investment in energy efficiency, establishing an Energy Efficiency Resource Standard and a 30% reduction in energy use by 2030 through EERS and a robust CHP program.**

As referenced above, there is a clear need to revise the dialing back of the RPS. While it will be difficult to meet the 30% by 2020 previous RPS, there is a clear need for a more aggressive RPS, especially from 2020 to 2025 and then 2030. **A revised Energy Master Plan should restore the 30% renewable energy goal from the 2008 EMP, which the Christie Administration rolled back to a 22.5% renewable energy portfolio standard in 2011. As importantly, the administration should adopt a visionary RPS of 80% of our energy coming from clean renewable sources by 2050.**

The Energy Master Plan for the most ignores one of the largest sources of carbon pollution in our state – the cars and trucks on our roads. We need to reduce transportation-related carbon emissions, which comprise about 50% of our carbon footprint.

The EMP should support and expand public transportation and introduce programs to reduce vehicle miles traveled, and aggressively expand our electric vehicle infrastructure like state leaders like California. Specifically, the plan should incentivize electric vehicle adoption, which would bring multiple benefits to the state. It will not only reduce carbon emissions and dependence on fossil fuels, but also benefit electric utilities by increasing utilization of the public grid and the sale of electricity, thereby offsetting revenue lost to energy efficiency and conservation. More vehicle charging stations, with enough penetration in public streets and private parking lots, can provide a way to relieve range anxiety.

To increase renewable energy penetration, and improve resiliency in the process, the Energy Master Plan should recognize the importance of electricity storage and offer incentives for expanded storage capabilities. This will not only deliver some short-term

benefits to current grid operation (such as peak reduction), but also provide the foundation for replacing more carbon-based energy generation with clean renewable energy.

While we can't retire our entire fossil fuel infrastructure overnight, the Energy Master Plan should provide a roadmap to get there, as per the mandate of the Global Warming Response Act. The ultimate goal should be replacing all fossil fuels with clean energy that produces little or no climate-heating greenhouse gases. **The Energy Master Plan should discourage development of new infrastructure, especially the explosion of gas pipelines in New Jersey across the state, but especially through preserved and protected state land** which the PennEast pipeline is targeting and through the Pinelands National Reserve. In an extraordinary turn of events, the Pinelands Commission staff have circumvented the review process by the Pinelands Commission members. This rubberstamped process reaffirms the importance of the Board of Public Utilities to serve as an independent body that won't rubberstamp pipeline applications brought for approval. These encourage increased production in the Marcellus Shale fields in Pennsylvania, which has an undocumented impact on climate change via unchecked methane pollution and the use of fossil fuels and pose serious environmental and health risks to the communities through which they pass. Excessive dependence on natural gas could also create a structural weakness resulting in demand spikes, especially during the winter heating season.

The most egregious shortfalls are the ones the Board of Public Utilities wrote into the 2011 Energy Master Plan. New Jersey has fallen far behind on its 2011 Energy Master Plan goal of 1,500 MW from Combined Heat & Power for commercial businesses. We need to ramp up investment in Combined Heat & Power programs for the commercial sector as well as energy efficiency incentives, especially weatherization, for the residential sector. New Jersey once ranked in the top 10 states nationwide for energy efficiency as recently as 2011, but has now fallen to 19th place, according to the 2014 ACEEE state scorecard.

To help ensure funds are available for these programs, the Energy Master Plan should explicitly preclude the raiding of the Clean Energy Fund to balance the state budget, which has already lost ratepayers more than a $1 billion during the Christie Administration.

Last, but not least, the failure of the Board of the Public Utilities to implement the 2010 Off-Shore Wind Economic Development Act shows a new low in the disrespect of the rule of law. What is extraordinary with this failure is the complicit nature that Gov. Christie has taken to sabotage his own legislation. A fervent supporter of off-shore wind in 2010, he is anything but in 2015. That has meant the irony of his own law acting as a clean energy millstone around his neck. The Christie Administration's failure on off-shore wind is thrown into sharp relief with the current construction of off-shore wind turbines off Block Island in Rhode Island, the investments by off-shore wind companies in other states, and the recent hearing in the Senate Judiciary Committee earlier this month, where President Mroz pledged to bring an independent consultant to help the

BPU with the crafting of the off-shore wind rules. While this action is welcome, it comes five year too late, and **any revised Energy Master Plan must include clear deadlines on when the BPU will issue its off-shore wind goals and a more formal adoption of the goal of 3,000 MW being generated by off-shore wind**. New Jersey can't be a clean energy leader by ignoring off-shore wind.

I want to conclude my comments by citing the words of one of New Jersey's most prolific inventors, the Wizard of Menlo Park. Thomas Edison inaugurated the Kearny Generating Station in 1925, which still has been repowered as a gas power plant and still operates primarily as a peaker facility. While most famous for his invention of the incandescent light bulb, he should heed Edison's words from early in the 20th Century.

"We are like tenant farmers chopping down the fence around our house for fuel when we should be using Nature's inexhaustible sources of energy — sun, wind and tide. ... I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait until oil and coal run out before we tackle that," said Thomas Edison in a conversation with Henry Ford and Harvey Firestone (1931); as quoted in *Uncommon Friends : Life with Thomas Edison, Henry Ford, Harvey Firestone, Alexis Carrel & Charles Lindbergh* (1987) by James Newton, p. 31.

Sincerely,

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P.S. I referenced multiple studies during my oral testimony. Here are a majority of them, and they should be included in my official comments. The issues they raise should be fully addressed in a revised Energy Master Plan.

P.P.S I am also attaching comments from the American Council for an Energy Efficiency Economy (ACEEE) and the Northeast Energy Efficiency Partnership (NEEP) from the 2011 EMP. Those comments are still instructive, and also show the importance of allowing the public and stakeholders to comment on this revised EMP.

LINKS:

Asm. Dan Benson's op-ed in the Star Ledger: "Energy Master Plan Built Around Clean Energy, Not Coal Will Guard Against Climate Change." (08/2105)
http://www.nj.com/opinion/index.ssf/2015/08/energy_master_plan_built_around_clean_energy_not_c.html

American Lung Association 2015 State of the Air:
http://www.stateoftheair.org/
http://www.stateoftheair.org/2015/states/new-jersey/

Risky Business: The Economic Risks of Climate Change in the U.S.
http://riskybusiness.org/reports/national-report/executive-summary

Northeast Analysis:
http://riskybusiness.org/index.php?p=reports/national-report/regions/northeast

New Jersey Shore Likely Faces Unprecedented Flooding by Mid-Century (12/2013):
http://marine.rutgers.edu/main/Front-Page-News/New-Jersey-Shore-Likely-Faces-Unprecedented-Flooding-by-Mid-Century.html

Dr. Bob Kopp of Rutgers with NYT op-ed on impact of climate on heat & humidity (06/2015): http://www.nytimes.com/2015/06/07/opinion/sunday/the-deadly-combination-of-heat-and-humidity.html?ref=opinion

Analysis Group: The Economic Impact of RGG on Nine Northeastern & Mid-Atlantic States (07/2015)
http://www.analysisgroup.com/uploadedfiles/content/insights/publishing/analysis_group_rggi_report_july_2015.pdf

Rocky Mountain Institute's Economics of Load Defection:
http://www.rmi.org/electricity_load_defection

Solutions Project Analysis by Stanford's Mark Jacobson:
http://web.stanford.edu/group/efmh/jacobson/Articles/I/USStatesWWS.pdf

American Council for an Energy Efficient Economy 2014 Scorecard:
http://aceee.org/state-policy/scorecard

New Jersey's Future: Coastal Towns At Risk From Sea-Level Rise
http://www.njfuture.org/2015/07/10/center-designation-coastal-towns-risk/

Additional Notes & Citations

[1] Kunkel, K. E., et al, 2013: *Regional Climate Trends and Scenarios for the U.S. National Climate Assessment: Part 1. Climate of the Northeast*, U.S. NOAA Technical Report NESDIS 142-1. 87 pp., National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, Washington, D.C.

[2] William Sweet et al., "Hurricane Sandy Inundation Probabilities Today and Tomorrow," in Thomas C. Peterson et al., eds. "Explaining Extreme Events of 2012 from a Climate Perspective," Special Supplement to the *Bulletin of the American Meteorological Society* Vol. 94, No. 9, September 2013. Available at www.ametsoc.org/2012extremeeventsclimate.pdf.

[3] Very heavy events defined as the heaviest 1 percen of all daily events. See Groisman, P. Y., R. W. Knight, and O. G. Zolina, 2013: "Recent trends in regional and global intense precipitation patterns," *Climate Vulnerability*, R.A. Pielke, Sr., Ed., Academic Press, 25-55.

[4] See note 1.

[5] U.S. Global Change Research Program, *Third National Climate Assessment*, 2014; Figure 16.2.

[6] 6 feet: Martin Vermeer and Stefan Rahmstorf, "Global Sea Level Linked to Global Temperature," *Proceedings of the National Academy of Sciences*, 106(51): 21527-21532, 2009, DOI: 10.1073/pnas.0907765106; flood frequency: see note 2.

[7] See "EPA Base Case" zip folder at the link provided.

[8] See "Option 1 – State" zip folder at the link provided.

Comments of Jim O'Reilly, Director of Public Policy
Northeast Energy Efficiency Partnerships (NEEP)
To the New Jersey Board of Public Utilities
Regarding the Revised 2011 New Jersey Energy Master Plan

August 25, 2011

President Solomon, Commissioners Asselta, Fiordaliso, and Fox: thank you for the opportunity to provide comment on the revised 2011 Energy Master Plan.[1]

As you are aware, NEEP is a regional nonprofit organization founded in 1996 whose mission is to promote the efficient use of energy in homes, buildings, and industry in New England, New York, and the Mid-Atlantic states. We do this through regionally coordinated programs and policies that increase the use of energy efficient products, services and practices, and help achieve a cleaner environment and a more reliable and affordable energy system.

The 2011 Energy Master Plan speaks to the high value the Christie Administration places on energy efficiency as a central energy policy strategy. As the report notes, efficiency is "the best way to lower individual energy bills and collective energy costs." Clearly, New Jersey's energy efficiency programs have been doing just that, saving over 30 million lifetime MWh in electricity use and 532,409 kW in peak demand since 2001.[2] These programs have benefitted all ratepayers, generating $2.60 for every dollar invested.[3] Energy efficiency programs not only save dollars that would otherwise go to out of state energy providers, but they also create well-paying in-state jobs. A recent report by the Brookings Institution noted that New Jersey ranks eighth nationally in "green jobs," with over 90,000 jobs, with growth of 4.7 percent between 2003 and 2010.[4]

However, despite the apparent value the Administration places on energy efficiency, NEEP is concerned about whether the revised EMP will translate into a tangible commitment by the state that allows the residents and businesses of New Jersey to capture the tremendous benefits offered by energy efficiency. In particular, we are troubled to see the EMP refer to the chief funding mechanism for energy efficiency programs as "a hidden tax," as well as its characterization that the electricity and natural gas reduction targets from the 2008 EMP are overly-aggressive or unachievable. For example, the Plan notes on page 21 that "Changes since the 2008 EMP require that the 20% energy reduction goal be modified..."

Given these statements, coupled with the significant harm the Christie Administration caused to the state's energy efficiency programs by diverting $158 million from the Clean Energy Program to the

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[1] These comments are offered by NEEP staff and do not necessarily represent the view of NEEP's Board of Directors, sponsors or funders.

[2] Office of Clean Energy Financial Reports, "2001-2010 Program Results," online at http://www.njcleanenergy.com/files/file/Library/2001-2010%20Program%20results.xls.

[3] Rutgers Center for Energy, Economic, and Environmental Policy (CEEP), "Analysis for the 2011 Draft New Jersey Energy Master Plan Update," March 21, 2011, 95, online at http://policy.rutgers.edu/ceeep/publications/2011/2011DraftEnergyMasterPlanUpdate.pdf.

[4] Brooking Institution, "The Clean Economy in the State of New Jersey," online at http://www.brookings.edu/~/media/Files/Programs/Metro/clean_economy/clean_economy_profiles/states/34.pdf

state budget in 2010, NEEP feels that nothing short of a clear and decisive commitment from the Administration to capture all cost-effective energy efficiency should be included in the final Plan.

The draft 2011 Plan leaves many of the important energy efficiency policy decisions for consideration by the Board of Public Utilities (BPU) at a later time. NEEP looks forward to providing feedback to the BPU as it evaluates the current New Jersey Clean Energy Program (CEP) and alternative program administration models. We urge the BPU to consider the following recommendations for inclusion in the final 2011 Energy Master Plan and future efficiency policy proceedings.

1) Maintain Funding for Customer Energy Efficiency Programs: While NEEP supports the state's efforts on building energy codes and state buildings, ratepayer-funded customer efficiency programs are essential to promoting savings in existing and new private buildings. The draft Master Plan focuses on the costs of energy efficiency programs, including inaccurately calling the Societal Benefit Charge (SBC) a "hidden tax," but their costs must be compared with the cost of supply. According to recent analysis, the average cost of New Jersey Clean Energy Program energy efficiency programs is about 2.5 cents/kWh, significantly less than the average retail price of electricity at 14.5 cents/kWh.[5] Energy efficiency is and will continue to be the best deal for New Jersey ratepayers into the foreseeable future.

Whichever program administration model New Jersey puts in place, long-term, secure, and adequate funding will be critical to its success. Stable funding allows for larger, multi-year savings projects and instills confidence in the market that New Jersey will continue to invest in efficiency in future years. This is particularly true in the commercial and industrial sectors. The final Energy Master Plan should recommend that investment levels for energy efficiency programs through the Societal Benefit Charge SBC, should be, at a minimum, maintained at current levels, and be open to adjusting those investments in the future to meet the state's energy efficiency goals. Never again should the administration consider raiding these *ratepayer* funds to supplement a *taxpayer*-based state budget.

2) Include Binding Energy Efficiency Targets: The draft EMP suggests that the administration is backing away from the savings goals from the 2008 EMP, a move that would prove costly to the state and put the state at a disadvantage with its neighbors. States throughout the Northeast and beyond have established a policy that favors achievable, cost-effective energy efficiency before turning to new electric and natural gas supply, often called an all-cost effective efficiency mandate. Leading states, such as Massachusetts and Vermont, allow state regulatory authorities to adopt binding short and long term energy saving goals that utilities or third-party program administrators must meet.[6] This approach is a flexible, market-based approach that seeks the lowest cost resources for ratepayers, promotes long-term reductions in energy use, and sends the appropriate signal to efficiency markets, program administrators and key customer sectors.

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[5] Cost of saved energy figure is taken from "Analysis for the 2011 Draft New Jersey Energy Master Plan Update," 96. New Jersey electric rates are taken from the EIA profile of New Jersey, online at http://www.eia.gov/cneaf/electricity/st_profiles/new_jersey.html

[6] Connecticut, Maine, Massachusetts, Rhode Island, and Vermont have all adopted policies that effectively call for their state's program administrators to promote efficiency before new generation resources and create multi-year savings goals through a collaborative stakeholder process. Maryland, New York, and Pennsylvania have taken a different approach, calling for certain levels of savings by a specific date. Our experience suggests that the approach in the former states is both more effective and easier to implement.

The 2011 Energy Master Plan should recommend that the BPU explore binding energy efficiency targets as part of its consideration of a new administrative model for its energy efficiency programs.[7] NEEP believes that the 20 percent reduction savings targets for electric and gas consumption by 2020 cited in the 2008 Energy Master Plan, representing annual savings of around 2 percent, are achievable and should form the basis for discussion of binding savings goals.[8] Appropriate incentives for achieving energy savings goals, such as shareholder performance incentives for program administrators and revenue decoupling for the electric and natural gas utilities, should also be considered.

3) Follow Through on Building Energy Codes and Appliance Efficiency Standards: NEEP wholeheartedly endorses the Plan's commitment to implementing aggressive building energy codes and its recognition of the value to the state of strong appliance efficiency standards. The first step in this commitment will be for the state to adopt at the earliest possible time the 2012 International Energy Conservation Code (IECC). The state would also be well served by adopting an informative appendix to the code that allows communities that so wish to adopt an even more efficient energy code, or a so-called "stretch code," similar to what the states of Massachusetts and Oregon have done in recent years. Finally, the state should not only monitor the full schedule of appliance standards rulemakings being undertaken by the Department of Energy, but be willing to weigh in to support those rulemakings that provide significant savings to the residents and businesses of New Jersey. As the facilitators of a regional project to advance appliance standards in the Northeast, NEEP is more than willing to work with the state on such input to the federal rulemaking process.

4) Create an Energy Efficiency Stakeholder Advisory Board: The Energy Master Plan should recommend that New Jersey create a stakeholder advisory board that has the authority to review energy efficiency programs and make policy recommendations to BPU and the legislature. States in the Northeast have found that transparent, inclusive advisory boards that have participation from utilities, state agencies, major energy users, consumer advocates, the environmental community, and other key energy policy stakeholders yield better program design and establish a forum to modify programs in response to on-going market developments. Stakeholder advisory boards have proven to be especially helpful at the launch of new energy efficiency initiatives.[9]

5) Focus on Developing Coordinated Energy Efficiency Programs: NEEP believes that the upcoming BPU evaluation of energy efficiency programs should focus on creating a coordinated delivery structure that serves all customers and all fuel types. We support efforts to transition the programs away from the current Clean Energy Program (CEP), which could provide for more flexible and responsive energy efficiency programs. The EMP references a number of alternative program delivery approaches, including an energy efficiency utility and a larger role for the distribution utilities. Each is worthy of consideration. Some states, like Connecticut, Massachusetts, and California, have found success by having the distribution utilities run its energy efficiency programs. Others, including Oregon, Wisconsin, and Vermont have all found that using a third-party administrator is an effective approach

[7] The BPU has the authority to adopt such binding targets according to its "energy efficiency portfolio standard" statute in Title 48, Section 3-87.
[8] New Jersey Energy Master Plan of 2008, p. 54, online at http://www.state.nj.us/emp/docs/pdf/081022_emp.pdf.
[9] See the "Recommendations for Policymakers" section of NEEP's 2010 "From Potential to Action" report for more about state experiences with stakeholder advisory boards, online at http://neep.org/public-policy/policy-outreach-and-analysis/potential-study.

to energy savings.[10] The delivery model matters less in our experience than good policy. In NEEP's experience, all successful programs include binding energy savings targets on program administrators, stable, long-term funding, coordinated statewide programs, the appropriate regulatory framework, including incentives and penalties linked to energy savings goals, and a process that receives input from all key stakeholders. NEEP would be happy to provide more information about successful program delivery models further with the BPU in the months ahead.

6) Financing Mechanisms Are Not a Substitute for Customer Programs: The draft Energy Master Plan discusses revolving loan funds as an alternative approach to energy efficiency programs. We recommend, however, that the BPU consider a revolving loan fund, or any other financing mechanism, as separate from the ratepayer-funded energy efficiency programs. Financing programs alone are inadequate to promote energy efficiency programs, as they cannot overcame informational and other market barriers to investing in efficiency or preserve a strong network of qualified contractors to undertake energy upgrades.[11]

We encourage the BPU to take note of the approach to financing taken in Massachusetts, Maine, and New York and other states. Each prioritizes establishing energy efficiency programs that address the needs of each customer sector first and then offers financing options that leverage ratepayer dollars and drive deeper savings projects. This approach best addresses market and financial barriers to energy efficiency while reducing overall program costs.

7) Evaluation, Measurement and Verification of Energy Efficiency Savings: In 2009, New Jersey joined ten other states in the Northeast and Mid-Atlantic region to develop common protocols for evaluating and reporting energy efficiency savings and their associated impacts. With cuts in the Clean Energy Program funds in 2010, New Jersey ceased its participation in the Regional EM&V Forum ('the Forum'). We encourage New Jersey to consider re-joining the Forum, including informing the Forum's 2012-2014 Three-year Plan currently in development, and guided by an independent evaluation recently conducted among Forum state members. Participation in selected Forum projects can help New Jersey leverage opportunities for joint research, saving money on expensive research projects that support efficiency savings bid into PJM's capacity market and can inform updates to New Jersey's savings assumptions. Additionally, NEEP welcomes New Jersey's participation in the Forum's Regional Energy Efficiency Database. Starting in 2012, Forum states will be reporting their statewide savings, costs, emission and job impacts in the database using consistent reporting parameters, thereby enabling states and regional entities to benchmark and analyze energy efficiency data and impacts across states and at regional levels.

We thank the Board for the opportunity to comment during the review of the state's Energy Master Plan. NEEP stands ready to help New Jersey maximize the potential of energy efficiency to improve to the state's economy, environment and future. Please do not hesitate to contact me at joreilly@neep.org or (781) 860-9177 ext. 118 with any questions or comments you may have.

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[10] If the BPU creates an energy efficiency utility, we encourage you to review the design NEEP outlined in its "An Energy Efficiency Strategy for New Jersey" report. Such an energy efficiency utility would be run by a third-party contractor, with assistance from the utilities, and coordinate all statewide energy efficiency programs. See "An Energy Efficiency Strategy for New Jersey, March 2009, p. 20-21, online at http://www.state.nj.us/emp/docs/pdf/041609NEEP.pdf

[11] See Vermont Law School Institute for Energy and the Environment, "Financing Residential Energy Efficiency in Vermont," July 2011, online at http://www.highmeadowsfund.org/storage/research/VLS-IEE%20Energy%20Efficiency%20Financing%20Study%20Final.pdf

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August 10, 2011

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Dear Ms. Dowling and Mr. Hambrect,

We are writing to provide comments of the American Council for an Energy-Efficient Economy (ACEEE) on the "2011 Draft Energy Master Plan" and the "Request for Information on Professional Energy Management Services for New Jersey's Clean Energy Program." ACEEE is a non-profit research organization that has, since 1980, focused on technologies, programs and policies to promote cost-effective energy-efficiency improvements in the U.S. We work on federal, state and utility programs and policies. We have reviewed the Draft Energy Master Plan and the Request for Information and wished to make a few comments.

First, we are happy to see that the first goal for the Clean Energy Program is "promotion and recognition of New Jersey as a national leader in support of new clean energy technologies and market transformation." New Jersey consumers and businesses can greatly benefit from nation-leading clean energy policies, both in terms of energy bill savings as well as economic development benefits. We note that in the most recent ACEEE state energy efficiency scorecard (issued in Oct. 2010), N.J. ranked 12th, indicated a strong foundation, but also room for improvement.[1]

Second, we were happy to see that one of the five overarching goals in the Energy Master Plan is to "reward energy efficiency and energy conservation and reduce peak demand". We agree with the statement in the plan that: "The best way to lower individual energy bills and collective energy rates is to use less energy. Reducing energy costs through conservation, energy efficiency, and demand response programs lowers the cost of doing business in the State, enhances economic development, and advances the State's environmental goals."

Third, we are happy to see that some of the details in this plan include improving energy efficiency in state government buildings and in state building codes, and expanding education and outreach. The building codes are particularly important and we urge N.J. to adopt the current versions of national model building codes including the 2013 International Energy Conservation Code (published in July 2011) and the 2012 commercial building code developed by the American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE).

However, we are concerned that some of the details in the plan will not lead to achievement of these goals and could well lead to N.J. no longer being an energy-efficiency leader. First, the plan proposes to drop the goal of 20% energy savings by 2020. While we agree that this goal is no longer achievable due to the passage of time and only modest actions since the 2008 plan, we did not see a proposed alternative goal. We suggest a goal of 15% savings by 2020. ACEEE research has found that energy efficiency goals, and efforts to hold parties accountable for meeting those goals, can significantly influence energy efficiency

[1] The full scorecard can be found at: http://www.aceee.org/research-report/e107 .

progress in a state.[2] And we recommend putting these specific goals in any contract that is issued to administer the Clean Energy Programs, with incentives for meeting the goals and penalties for falling short.

Second, the plan seems to envision a change from incentive-based energy-efficiency programs to programs that are based on a revolving loan fund or an energy-efficiency utility "that would generate revenue out of energy savings". While we agree that good financing programs can be an important component of a comprehensive energy efficiency program portfolio, providing financing alone is simply not sufficient to produce significant customer response. Financing addresses only one of the several significant market barriers that inhibit customer adoption of energy efficiency measures. Successful comprehensive programs also provide direct financial incentives (i.e., rebates and measure cost buy-downs; marketing, information and technical assistance to customers; information and training to businesses involved in the "supply chain" for energy efficiency products; and quality control and evaluation oversight).

Our primary concern with the proposed approach for New Jersey is that our research has found that energy efficiency financing will only reach a small minority of customers and a program that relies strictly on financing will not be very effective. Later this month we will be publishing a report on energy efficiency financing programs. Looking around the country we find that most such programs have reached less than 1% of eligible customers and found only four programs with participation rates of over 1%. And the only program with a participation rate over 10%, is one operated by the Sacramento Municipal Utility District, but their program began in 1977 and thus they have taken more than 30 years to reach a cumulative participation rate of 16%.[3] By contract, a variety of incentive programs have achieved participation rates or 30% or even 50% or more.[4] We also note the results of several studies in which participation rates in incentive and loan programs can be compared. For example, Wisconsin Electric and Puget Power in the 1980's found that when commercial customers were offered a choice of a zero interest loan or a rebate of the same value, over 90% chose the rebate.[5] There are similar studies and residential customers, with 15-49% of customers preferring loans, and the rest preferring grants equal to the loan subsidy.[6] We also note that if N.J. wants to emphasize financing more, that it pursue "on-bill financing" in which energy loans are serviced on utility bills, with loan payments directly offset by energy bill reductions, and administration eased by such steps as using bill payment history to help access credit and using current monthly bills to help service loans. Several states have recently passed legislation establishing on-bill programs, including N.Y. But these states all use financing as just one component of a comprehensive energy efficiency program portfolio.

Energy efficiency is by far the lowest-cost utility system resource - - costing only one-half to one-fourth as much as acquiring new electricity generation resources[7]- - but it is not free. It does require significant utility system investment. It would not be appropriate to believe that energy efficiency resources can be obtained at little or no cost through a revolving loan program or other "self-sustaining" program scheme. None of the top 25 states in ACEEE's national energy efficiency rankings rely solely or even primarily on a self-sustaining revolving loan program. All of those states fund comprehensive energy efficiency programs through appropriate utility system revenues.

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[2] See Sciortino et al. 2011. *Energy Efficiency Resource Standards: A Progress Report on State Experience* published in June 2011. http://www.aceee.org/research-report/u112 .

[3] Hayes, et al. August, 2011. *What Have We Learned from Energy Efficiency Finance Programs?* Will be posted at http://www.aceee.org/topics/energy-efficiency-financing .

[4] Nadel, Pye and Jordan. 1994. *Achieving High Participation Rates: Lessons Taught by Successful DSM Programs*. http://www.aceee.org/research-report/u942 .

[5] Nadel, Steven. 1990. *Lessons Learned: A Review of Utility Experience with Conservation and Load Management Programs for Commercial and Industrial Customers.* http://www.aceee.org/research-report/u901 .

[6] Stern, Berry and Hirst. 1985. "Residential Conservation Incentives." *Energy Policy*, April, pp. 133-142.

[7] *Friedrich et al. 2009. Saving Energy Cost-Effectively: A National Review of the Cost of Energy Saved Through Utility-Sector Energy Efficiency Programs. http://www.aceee.org/research-report/u942 .*

Finally, the plan includes a goal to "improve natural gas energy efficiency", but provides no specifics. We agree that this is an important objective and recommend that specific goals be established and key parties, such as natural gas utilities, be held accountable for meeting these goals. For example, Minnesota, Illinois, Iowa, Colorado, Michigan, Oregon, N.Y., Massachusetts, and California all have specific energy savings goals for which natural gas utilities are held accountable.[8]

In conclusion, there are a variety of useful elements in the Draft Energy Master Plan. But the plan needs to be strengthened to set specific enforceable goals, and to also recognize that financing is but one element in a comprehensive energy efficiency portfolio. If New Jersey wishes to be among the nation's leaders it must sustain significant utility system investment in energy efficiency - - the lowest-cost utility system resource.

If you have any questions about these comments, please do not hesitate to contact us.

Sincerely,

Steven M. Nadel
Executive Director

Dr. Martin Kushler
Senior Fellow

[8] See ACEEE *Scorecard*, referenced in footnote 1.

UNIVERSITY OF DELAWARE | College of Earth, Ocean, & Environment

SPECIAL INITIATIVE ON OFFSHORE WIND

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Email

August 24, 2015

EMP Update
Board Secretary
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Re: Energy Master Plan Update

Dear President Mroz and Commissioners of the New Jersey Board of Public Utilities:

The Special Initiative on Offshore Wind (SIOW) is pleased to provide comments regarding New Jersey Board of Public Utilities (BPU) Energy Master Plan (EMP) Update. SIOW is an independent project at the University of Delaware that supports the advancement of offshore wind (OSW) as part of a comprehensive solution to the most pressing energy problems facing the United States. SIOW provides expertise, analysis, information sharing, and strategic partnership with industry, advocacy and government stakeholders to build understanding and drive the deployment of offshore wind.

BPU requested that comments on the EMP Update focus on the Goals and Recommendations of the 2011 Energy Master Plan. The following comments focus specifically on OSW as it relates to the 2011 EMP's goal of "promoting a diverse portfolio of new, clean, in-state generation."

The 2011 EMP asserted the BPU's confidence that the 1,100 MW OSW target objective of the Offshore Wind Economic Development Act (OWEDA) of 2010 was achievable, and asserted the Christie Administration's support of OSW as a carbon-free renewable energy resource that has the potential to "develop a manufacturing and support industry within the State, thereby creating direct, indirect, and induced economic benefits for many years to come."

That statutorily set target referenced in the 2011 EMP is indeed achievable for New Jersey. New Jersey's developable OSW energy resource is robust. According to the National Renewable Energy Lab (NREL), the raw potential of OSW energy 12-50 nautical miles off the coast of New Jersey and in waters shallower than 60 meters is nearly 70GW. Taking into account likely exclusions[1] due to human and wildlife uses the "developable" resource off of New Jersey's coast exceeds 50GW, with nearly 9 GW of that potential in waters 12-50 nm from shore and shallower than 30m. OWEDA's goal of 1,100MW of OSW is a fraction of the state's potential.

[1] Exclusions are estimated using exclusion factors developed to acknowledge conflicting use of the ocean

Second, U.S. OSW has reached significant milestones this year, putting to rest claims that OSW is not achievable here. At the time of the 2011 EMP, no OSW farms had been constructed in the U.S. nor had any projects completed project financing. However, in March, 2015 the Block Island Wind Farm, a 30MW, 5-turbine project off the coast of Rhode Island, completed its project financing. Deepwater Wind, that project's developer, commenced construction of the project in August 2015.

Third, the cost of OSW energy has declined as global deployment has increased. The 2011 EMP rightly noted that OSW's capital costs are higher than those of onshore wind, but also rightly noted that OSW has "higher and more consistent capacity factors than onshore wind, thus helping to reduce the net cost of producing energy and RECs from offshore locations." That said, it is important to mention that OSW costs are dropping sharply in Europe, where 10.4 GW have been installed, across 82 wind farms in 11 countries. Sharp cost reductions in Europe have been a result of the introduction of large turbines and advances in foundation technology.[2]

Indeed, U.S. projects are poised to reap the benefits of the technological innovation and increased efficiencies that large-scale European deployment has pulled to market. Recent research conducted by SIOW in collaboration with New York State Energy Research and Development Authority (NYSERDA) examined the impact of utilizing 8MW turbines rather than 5-MW turbines (the turbine size that market outlook scenarios assumed would be used for early-stage US projects) in a hypothetical build-out of OSW farms in the New York Bight. Assuming this change for the hypothetical projects with a final investment decision in 2020, SIOW found a 22% reduction in cost of energy.

SIOW's research for NYSERDA further concluded that thoughtful state action and policy can achieve even deeper cost reductions -- up to an additional 30%. Two primary state policies were identified: 1) increasing market visibility and 2) ensuring revenue certainty.

Market visibility refers to certainty of size and time for future market demand, which reduces uncertainty risk in investment decisions.[3] SIOW's research found that market visibility has the potential to yield a roughly 15% CAPEX reduction, which could result in a LCOE reduction of 11.5% (again, modeled on hypothetical projects in the New York Bight).[4] Maintenance costs and insurance costs could be also reduced in the 20% range, due to economies of scale. This figure could yield a reduction in cost of energy of 3.7%.

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[2] See Offshore Wind: Delivering More for Less: An Independent Analysis Commissioned by Statkraft UK, July 2015. http://www.statkraft.com/globalassets/4-statkraft-uk/offshore_wind_more_for_less_pages.pdf

[3] McClellan, Stephanie; Ozkan, Deniz; Kempton, Willett; Levitt, Andrew; Thomson, Heather. 2015. New York Offshore Wind Cost Reduction Study. Prepared for New York Energy Research and Development Authority. February. Page 37

[4] Ibid. Page 37

Clear market visibility at the state level is also likely to generate repeated investment by equity investors with sector knowledge and experience, as opposed to pioneer investors, lowering the cost of equity and hence the weighted average cost of capital (WACC). It was estimated that this phenomenon could reduce the cost of equity by as much as 3% (from 15% to 12% for construction equity and 11% to 8% for operating equity). Lower equity in turn would yield a reduction in WACC for construction and a reduction in WACC for operation. SIOW estimated that for the hypothetical New York projects, total WACC would likely fall by 1.2%, reducing cost of energy by 14.1%.

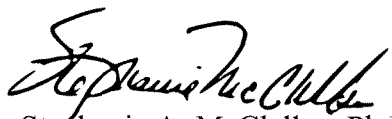
Revenue certainty will also reduce the cost of OSW energy. SIOW examined the impact of revenue certainty achieved through the adoption of policy designed to ensure power produced by OSW farms can be sold under long-term contract, either bundled PPAs or other mechanisms. Revenue certainty reduces investor risk, leading to lower costs of borrowing and bringing in LCOE reductions ranging from 17%-18% based on analysis performed by SIOW.[5]

In OWEDA, New Jersey has the policy design attributes – market visibility of more than one potential OSW project and revenue certainty – that *if implemented properly* can achieve significant cost reductions and deepen the reductions that will come to New Jersey projects from Europe's decade-plus history of technological and industrial development.

However, while the 2011 EMP stated BPU's confidence that the statutory requirements were achievable, BPU has not made measurable progress towards implementing OWEDA. There are long-standing issues that can be resolved; the EMP Update is an opportunity for BPU to define a clear path for BPU to resolve the outstanding issues and implement OWEDA.

In summary, SIOW recommends that the 2015 EMP Update preserve the OSW energy goals of OWEDA that were reiterated in the 2011 EMP and importantly, define a clear path for the law's implementation and deployment of New Jersey's largest clean energy resource.

Sincerely,



Stephanie A. McClellan, Ph.D.
Director
Special Initiative on Offshore Wind

[5] Ibid. Page 45

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PSEG
Services Corporation

August 24, 2015

BY ELECTRONIC DELIVERY

Irene Kim Asbury, Secretary
New Jersey Board of Public Utilities
Division of Economic Development and Energy Policy
44 South Clinton Ave, PO Box 350
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COMMENTS OF THE PSEG COMPANIES[1]
ON
THE ENERGY MASTER PLAN UPDATE

I. Introduction

PSEG appreciates the opportunity to submit written comments to the New Jersey Board of Public Utilities ("Board") as part of the State's 2015 Energy Master Plan ("EMP") update. As the EMP update process moves forward, PSEG is committed to continued participation.

PSEG has a long history of partnership with the State, aligning its interests with those of New Jersey. Significantly, we agree with the Board that, although there is certainly more work to be done, New Jersey is making good progress toward achieving its EMP goals — lowering costs to consumers, promoting energy efficiency and energy conservation and supporting renewable energy, particularly on landfills and brownfields thereby maximizing their beneficial use.

With respect to the overarching EMP objective of lowering energy costs, since 2009, PSE&G residential gas bills are down 44% because of the lower cost of natural gas supply while electric bills have remained steady throughout this time. We agree with the Board's recommendation to focus on infrastructure investment to improve energy resiliency, emergency preparedness and response. Infrastructure investments that enhance the reliability and resiliency of the electric and gas systems will benefit all customers and create jobs for years to come.

PSEG has supported and looks forward to continuing to support the EMP's goals of making energy accessible, reliable, and affordable; maintaining a balanced portfolio of

[1] The PSEG Companies, or PSEG, are Public Service Electric and Gas Company ("PSE&G"), PSEG Power LLC ("PSEG Power") and PSEG Energy Resources & Trade LLC ("PSEG ER&T").

clean generation resources, delivering the economic and environmental benefits of energy efficiency; and supporting new energy technologies and renewable energy investments.

PSEG respectfully submits that the following six key elements need to be incorporated into the EMP in order to effectively update the plan in recognition of the energy-related challenges that now face the State:

- **Regulatory Reform to Effectively and Efficiently Facilitate Investment in Infrastructure and Resiliency** – The EMP should support further efforts directed towards resiliency and infrastructure investments. In particular, the EMP should recognize the need for regulatory reform that would create a more standardized process for making resiliency investments, including the accelerated replacement of old gas mains. Utilities and their customers would benefit from greater predictability on the process and goals in order to more effectively plan out these large infrastructure investments so that they are made in a timely manner, lead to more consistent job creation and are structured in a way that maximizes expenditure efficiencies on behalf of the ratepayers and thereby minimizes rate impacts.
- **Recognition that Competitive Markets Have Proven Capable of Ensuring the Development of Diversified Clean Conventional Generation** – Following from the publication of the 2011 Energy Master Plan ("2011 EMP"), it has been made clear that adjustments to the competitive market can facilitate investment in low- or no-carbon central station power – when and where it is needed and in the most efficient way. New Jersey has seen new clean natural gas generation developed without customer subsidies, and the market continues to ensure reliable supply for New Jersey and the whole PJM footprint. Accordingly, the EMP should be updated to remove references to alternative approaches. Well-functioning competitive power markets remain the best way to ensure reliable supply and foster investment. PJM's Reliability Pricing Model and energy markets as well as the Basic Generation Service ("BGS") auction developed by the Board are providing service in a reliable and economic manner to New Jersey customers. Having said this, it is also important to recognize that for New Jersey to achieve its energy goals, the EMP must continue to reflect the importance of not just new generation, but the continuation of an adequate diversified fuel mix and balanced portfolio of generation resources to meet all energy reliability needs of the state.
- **Recognition of the Central Role Nuclear Energy Has and Must Continue** – With increasing state and federal public policy emphasis on reducing carbon emissions, it is abundantly clear that New Jersey made the right choice with its investment in nuclear power and, in so doing, undoubtedly has avoided significant tons of carbon emissions over the past several decades. Nuclear power has proven to be the most effective carbon-free central station power source available and New Jersey's nuclear facilities provide about 50% of all the power generated in this State, all without any harmful pollution or carbon emissions. The EMP needs to strongly support and incent New Jersey's nuclear industry consistent with its support for other emission free resources such as renewable energy.

- **Continued Commitment to Natural Gas Infrastructure** – To ensure the continued access to reliable low-carbon emitting generation, the EMP update should continue its commitment to natural gas infrastructure development.
- **Continued Building upon Solar Development Successes, Particularly on Landfills and Brownfields** – The 2011 EMP sought the development of renewable generation and fuels to improve the emission footprint of New Jersey in a manner that supports the growth of green sustainable jobs in New Jersey. It has succeeded in charting a pathway that continues to see solar development on the rooftop level and, perhaps more significantly, on the grid-connected level, particularly on landfills and brownfields. The EMP update should continue building upon the momentum it has created through supporting efforts to develop solar on land that otherwise would have minimal use and, in so doing, fairly sharing the costs and benefits of solar across all ratepayers.
- **Removal of the Disincentives for Aggressive Utility Investment in Energy Efficiency (EE)** – The EMP update needs to support regulatory changes necessary to provide utilities with the right incentives to aggressively pursue EE, and to remove the disincentives that harm utilities when customers reduce their usage.

The following comments and suggestions are offered in the spirit of cooperation, so the Energy Master Plan can become a comprehensive road map to New Jersey's energy future and can gain broader support from constituents.

II. Regulatory Reform to Effectively and Efficiently Facilitate Investment in Infrastructure and Resiliency

It is estimated that the average annual cost of power outages nationwide caused by severe weather events is between $18 billion and $33 billion per year.[2] It follows that in a year with significant storms, the costs would be much higher.[3]

PSE&G has already begun to address the need for a more resilient electric and gas network with its Energy Strong Program. In doing so, it will create up to 2,000 jobs to bolster the state's economy. Energy Strong will make the PSE&G electric system more resilient by better protecting many of the substations impacted by recent storms, making our grid smarter with new technologies, and adding redundancy to the grid as well. Energy Strong will also improve our gas network by replacing older gas mains with new resilient materials, which will reduce methane emissions caused by leaks in the older infrastructure, reducing greenhouse gas emissions by an equivalent of 38,000 tons of CO2 a year and will support increased use of natural gas for traditional applications, as

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[2] *Economic Benefits of Increasing Electric Grid Resilience to Weather Outages* (August 2013), p. 3. Prepared by the President's Council of Economic Advisers and the U.S. Department of Energy's Office of Electricity Delivery and Energy Reliability, with assistance from the White House Office of Science and Technology, http://energy.gov/sites/prod/files/2013/08/f2/Grid%20Resiliency%20Report_FINAL.pdf.

[3] See ibid. at p. 3 finding that the cost estimates related to Sandy ranged from $27 billion to $52 billion nationally.

well as emerging technologies, such as fuel cells, combined heat and power equipment, and compressed natural gas vehicles.

PSE&G is also pursuing with the Board further efforts to proactively modernize its gas systems to promote a safe, clean and reliable natural gas system well into the future. Cast iron and unprotected steel gas pipes represent less than 30 percent of PSE&G's infrastructure, but they account for more than 80 percent of distribution system's methane emissions each year. Our objectives remain to provide our customers and the communities we serve with the environmental benefit of reduced greenhouse gas emissions, and a positive impact on employment and the New Jersey economy.

The EMP update should support further efforts to enhance grid resiliency and infrastructure investment programs needed to achieve this goal. These programs have created thousands of jobs and have enabled construction of improvements designed to mitigate economic losses that will occur in relation to future storms. In particular, the EMP should recognize the need for regulatory reform that would create a more standardized process for making resiliency investments including the accelerated replacement of old gas mains.

Utilities and their customers would benefit from greater predictability on the process and goals in order to more effectively plan out these large infrastructure investments so that they are made in a timely manner, lead to more consistent job creation and are structured in a way that maximizes expenditure efficiencies on behalf of the ratepayers and thereby minimizes rate impacts. We understand that microgrid investments, in certain applications, may play a complimentary role to protect certain critical facilities. That said, investments that make our existing electric and gas transmission and distribution systems more resilient have and should remain the priority, as they benefit the greatest number of residents in the most cost-effective manner.

PSEG strongly supports the comments by the New Jersey Utilities Association ("NJUA") recommending that the Board consider implementing rate adjustment mechanisms, which may refer to trackers, riders, or other types of mechanisms that allow for the timely recovery of investments for one or more specific expenditure items outside of base rates. Rate adjustment mechanisms can be designed to expire when the specific amount of cost recovery is satisfied and therefore may be particularly useful for storm response and resiliency programs,[4] as well as other programs supported by the EMP, such as renewable energy programs.[5]

Agreeing to a clear, long-term plan to ensure essential infrastructure and resiliency work is completed is more efficient and cost-effective than restarting a negotiation about these investments every few years. In furtherance of the Administration's goal to promote economic development, create jobs, and ensure reliability,[6] PSEG echoes the comments

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[4] *Economic Benefits of Increasing Electric Grid Resilience to Weather Outages* at 21, 22, and Appendix A.
[5] See generally "Alternative Regulation for Emerging Utility Challenges: An Updated Survey", (January 2013), Edison Electric Institute, http://www.eei.org/issuesandpolicy/stateregulation/Documents/innovative_regulation_survey.pdf.
[6] 2011 EMP, p. 1.

by NJUA and also respectfully recommends that the EMP clearly convey support for continued implementation of capital investment programs with appropriate cost recovery mechanisms for both electric and natural gas utilities.

III. Recognition that Competitive Markets Have Proven Capable of Ensuring the Development of Diversified Clean Conventional Generation

The EMP should continue to recognize that the State's core mission in the area of energy policy should be to maintain reliability and supply adequacy at prices that are fair to consumers. In this regard, PSEG believes that the State has been successful in opening the electric market to retail competition, utilizing the Basic Generation Service auction for default service, and relying upon the competitive wholesale markets administered by PJM to ensure supply adequacy at competitive prices. The EMP should continue to support these policy choices.

Regarding generation, following from the publication of the 2011 EMP, it has been made clear that adjustments to the competitive market can facilitate investment in clean generation – when and where it is needed and in the most efficient way. New Jersey has seen new clean natural gas generation developed without customer subsidies, and the market continues to ensure reliable supply for New Jersey and the whole PJM footprint. We recommend that references to alternative approaches should be removed from the EMP. Well-functioning competitive power markets remain the best way to ensure reliable supply and foster investment.

Having said this, it is also important to recognize that for New Jersey to achieve its energy goals, the EMP should reflect the importance of not just new generation, but the continuation of an adequate diversified fuel mix and balanced portfolio of generation resources to meet all energy reliability needs of the state.

New Jersey currently has a well-balanced portfolio of power resources, including over 4,000 MW of nuclear power, over 7,300 MWs of clean natural gas power plants, almost 2,000 MWs of coal power and approximately 1,700 MWs of renewable resources.

IV. Recognition of the Central Role Nuclear Energy Has and Must Continue.

New Jersey's nuclear facilities provide about 50% of all the power generated in this State, all without any harmful pollution or carbon emissions. Because of the State's commitment to nuclear energy, New Jersey has one of the cleanest generating fleets in the nation.

Nuclear energy is also a source of jobs and economic development in the state, not only at its nuclear facilities, but through the local nuclear supply chain as well. There are over fifty companies with facilities in New Jersey that are nuclear suppliers. Areva, Burns & Roe, Day & Zimmerman, Hitachi, Holtec, The Shaw Group, and URS Corporation are all companies in the nuclear supply chain and have over 3,700 employees in the State. Most recently, PSEG is proud to be supporting the State and working with Holtec International to explore small modular reactor design and development.

Throughout this process, a number of stakeholders have commented and requested expansion of the current Class I and Class II REC definitions to include technologies such as combined heat and power, geothermal and other resources that do not meet the current generation source requirement. However, some of these stakeholders have also expressed opposition to nuclear and natural gas generation. It is inconceivable that a discussion around New Jersey's policy on low and zero-carbon generation sources would not include nuclear and natural gas as essential to ensuring reliable sources of energy at the lowest costs to consumers.

Earlier this month, the details of the United States Environmental Protection Agency's Clean Power Plan were released, and New Jersey was assigned the lowest CO2 emission target in the PJM region and one of the lowest nationally. Nuclear energy will be a critical component as the state strives to achieve the objectives set forth in the plan. As you know, in 2011 PSEG Nuclear LLC ("PSEG Nuclear")[7] received NRC approval for 20-year license extensions for Salem and Hope Creek. PSEG is positioned to provide New Jersey with economical and carbon-free electricity from its nuclear plants well into the future.

But the nuclear industry is facing growing challenges from increasing regulatory and safety compliance costs. The EMP needs to strongly support and incent New Jersey's nuclear industry consistent with its support for other emission free resources such as renewable energy. PSEG stands ready to continue to work with the State of New Jersey to find ways to address these issues.

V. Continued Commitment to Natural Gas Infrastructure.

Although significant support has been expressed for natural gas infrastructure as a vital low-carbon emitting component of New Jersey's diversified fuel mix, certain commenters at the EMP update public hearings expressed opposition to the continued use of natural gas as a generation source.

Recognizing that New Jersey's energy needs cannot be met by renewables, energy efficiency and demand response alone, the 2011 EMP correctly heightened New Jersey's reliance on natural gas as a less carbon-intensive fossil fuel. Moreover, it correctly noted that New Jersey's aspiration to fulfill 70% of the State's electric needs from "clean" energy sources by 2050 is achievable if the definition of clean energy is broadened beyond renewables to include nuclear, natural gas, and hydroelectric facilities.[8] In this context, it must also be noted that many of the public commenters that expressed opposition to natural gas generation went on to express support for increased use of combined heat and power ("CHP") applications. As the 2011 EMP correctly observes, expansion of CHP will increase, not decrease, the State's use of natural gas.[9]

The EMP Update should continue the 2011 EMP's commitment to the expansion of the existing natural pipeline network that serves gas utilities and power plants throughout

[7] PSEG Nuclear is a wholly owned subsidiary of PSEG Power.
[8] 2011 EMP at 3.
[9] 2011 EMP at 8.

New Jersey so long as it is done safely and in compliance with environmental regulations.

Natural gas infrastructure remains a vital component of New Jersey's energy supply approach. It is undeniable that the availability of affordable energy will make New Jersey more attractive to energy-intensive businesses and thereby aid the state's environmental and economic goals.

The United States is the world's leader in natural gas production, ahead of Russia, Qatar and Iran. The natural gas reserves in Pennsylvania's Marcellus Shale now lead the country. Shale gas has had a dramatic impact on natural gas prices, with average prices today more than 60 percent below what they were in 2008.

It is anticipated that over the next 25 years, natural gas and renewables will supply an increasing share of U.S electric generation.

As the 2011 EMP correctly notes "Adding pipeline deliverability is a necessary complement to New Jersey's reliance on natural gas for electricity generation. It will lower wholesale power costs while strengthening the foundation for economically and environmentally sound programs aimed at lessening the State's dependence on oil."[10]

VI. Continued Building Upon Solar Development Successes, Particularly on Landfills and Brownfields

PSE&G's Solar 4 All and Solar Loan programs have helped make New Jersey a national leader in the deployment of solar energy. In particular, since the release of the 2011 EMP, we have transitioned our solar energy focus to target landfills and brownfields throughout the PSE&G service territory. This approach has thus far resulted in 31 MWs of landfill solar energy with almost 53 MWs due to be in service by the end of 2016.

As the 2011 EMP suggested, landfill solar development has created hundreds of jobs, driven additional economic development and, perhaps most significantly, made productive use of underutilized sites while preserving clean farmland. Moreover, this development has been achieved at roughly 60% of the cost of rooftop solar systems with costs and benefits fairly shared across all ratepayers. In summary, the 2011 EMP determination that brownfields and landfills are well-suited for the development of large solar generation appears to have been borne out, and the EMP update should continue to support solar on these sites.

The EMP update provides an opportunity to successfully report that utility involvement in solar development consistent with N.J.S.A. 48:3-98.1 has proven to be instrumental in providing universal access to renewables and energy efficiency, at a lower cost than would otherwise be possible, generating jobs along with green energy. The cost recovery mechanisms approved by the Board for PSE&G's solar investments provide a contemporaneous return on these investments – a feature that provides the necessary incentives to deploy the required capital expenditures. This is the 21st century approach

[10] 2011 EMP at 6.

to universal access for consumers and PSE&G looks forward to continuing to contribute to solar energy development.

VII. Removal of the Disincentives for Aggressive Utility Investment in Energy Efficiency

Last, but certainly not least, the 2011 EMP places a strong emphasis on energy efficiency and PSE&G has been the leader among utilities in helping the State pursue its EE goals. EE is the lowest-cost solution offered in the EMP and also serves to create jobs and promote economic development. New Jersey should continue to promote the use of EE to meet its energy goals, and utilities can play a critical role in delivering EE. The EMP should seek to expand EE initiatives and align the incentives for utilities to deliver EE to customers.

PSE&G has played a key role in delivering energy efficiency to hospitals, multifamily housing facilities, particularly for low income customers, small commercial and industrial customers, government buildings, and senior citizen housing. We have received Board approval to invest over $400 million to successfully assist customers with cost beneficial energy efficiency upgrades that have reduced operating costs, increased competitiveness and helped these businesses retain and add jobs. Overall, it is estimated that PSE&G's investment in energy efficiency has put over 1000 people to work and that completed projects and completed projects to date have saved in approximately 207,820 MWhrs of electricity and 6.6 million therms of natural gas per year resulting in 154,212 fewer tons of CO_2 released into the atmosphere each year.

As commenters at the public hearings have noted, despite the successes in promoting energy efficiency, it is also true that New Jersey needs to do more and residents and businesses are not investing in efficiency at anywhere near the rate necessary to take full advantage of EE. Although it has been shown time and time again that savings associated with energy-efficiency improvements exceed the costs, most consumers are not well-positioned to identify and undertake economically sensible conservation decisions. Because pay-back comes at a future date after the expenditure is made, most consumers – including many small businesses – either do not perceive the value of the investment or are unwilling to devote the necessary capital needed to fund the projects. For many large businesses, energy efficiency projects, even with attractive paybacks, usually lose out to capital investments that more directly impact the business's core mission.

Recognizing that achieving much higher levels of energy efficiency must continue to be a fundamental goal of the EMP update, we would like to collaborate with the Board and other stakeholders to expand upon PSE&G's role and further help reduce customers' bills, clean the environment and put more money back into New Jersey's economy. Adopting policies and mechanisms that provide the incentives and framework for utilities to pursue opportunities for energy efficiency and conservation should be included as a central EMP update initiative.

As New Jersey tries to rise up the state rankings for delivering energy efficiency, it is worth noting that of the top 15 states delivering energy efficiency, 13 have their utilities playing a prominent role.[11] Utilities have several advantages to overcome many of the barriers that result in customers' lack of investment in EE, including brand recognition, trust of customers, use of our bill and patient capital to invest. Utilities are well equipped to perform the role that consumers are failing to perform by promoting energy efficiency and developing energy efficiency projects:

- Utilities have extensive experience in providing energy and constructing facilities – in the case of PSE&G, more than a century of experience;
- Utilities have a highly skilled and dedicated workforce living in the same communities that they serve;
- Utilities have a long track record in deploying capital to achieve social benefits; and
- Utilities have the knowledge and ability to educate the public about how to save energy.

Further, the vast majority of residents and businesses in the State are served by electric and/or gas public utilities. PSE&G has confirmed through its successful EE programs that it is ideally positioned to promote energy efficiency, house by house, neighborhood by neighborhood. This includes opportunities to bring energy efficiency not only to affluent households but also to urban residents, low-income customers and renters – "universal access" to all customer classes. PSE&G is uniquely positioned to increase penetration across all customer segments by making investments that can be amortized over time as opposed to being expensed in the year the measures are installed.

With this said, more clarity on utilities' role delivering energy efficiency would help all parties. Our utility programs have attempted to evolve along with changing state policy goals; however, the remaining uncertainty around the utility role means that our energy efficiency business only exists on a filing-to-filing basis. This makes it difficult to plan, staff, and more fully integrate the goal of saving customers energy into the day-to-day business of the utility.

The EMP should support the regulatory changes necessary to provide utilities with the right incentives to aggressively pursue EE, and to remove the disincentives that harm utilities when customers reduce their usage. As noted above in connection with solar development, sustained and robust utility involvement is predicated on regulatory mechanisms that allow utilities to earn a return on these investments and provide for prompt cost recovery.

The EMP update should therefore include policies to further promote utility involvement in energy conservation and efficiency programs such as those under undertaken by PSE&G to date and which have enjoyed so much success. In particular, the EMP should expressly recognize the need for regulatory mechanisms that allow utilities to invest in

[11] The 2014 State Energy Efficiency Scorecard, Report Number U1408, American Council for an Energy-Efficient Economy.

energy efficiency and to earn a fair return on those investments. By employing this approach, the State can best provide the sources of capital and the incentives to aggressively pursue energy efficiency and conservation measures. In addition, the EMP should recognize the unique role that utilities can fulfill by deploying energy efficiency projects across all customer classes, geographic areas and economic strata.

VIII. Conclusion

PSEG appreciates the opportunity to take part in this Energy Master Plan Update process. PSEG respectfully submits that efforts should focus on the six areas identified in these comments:

- **Regulatory Reform to Effectively and Efficiently Facilitate Investment in Infrastructure and Resiliency**
- **Recognition that Competitive Markets Have Proven Capable of Ensuring the Development of Diversified Clean Conventional Generation**
- **Recognition of the Central Role Nuclear Energy Has and Must Continue**
- **Continued Commitment to Natural Gas Infrastructure**
- **Continued Building Upon Solar Development Successes, Particularly on Landfills and Brownfields**
- **Removal of the Disincentives for Aggressive Utility Investment in Energy Efficiency**

Concentrating on these areas has the greatest potential for helping the State to meet the challenging environmental and economic issues that it faces.

PSEG appreciates the opportunity to provide these comments and looks forward to a continuing dialogue as the EMP update process continues.

Respectfully submitted,

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