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COMMENTS ON 2018 ENERGY MASTER PLAN

Governor Murphy's priorities are clear regarding energy and the desire to forcefully address Climate Change. New Jersey must lead - in mitigation and in adaptation and doing so in an efficient and cost effective way to protect all segments of our society. The Energy Master Plan (EMP) Committee, comprised of the State agencies most important to this effort, is working together on accomplishing their important charge. This is an exciting opportunity for the BPU and the other agencies/departments to play a major and critical role in developing New Jersey's energy future for decades to come. Thank you for the opportunity to comment.

This EMP should be a glide path toward New Jersey's 2050's goal of 100% clean energy and mandated requirement of 80% renewables by 2050. Climate Change is making our weather increasingly extreme, and, unfortunately, we haven't seen anything yet. Your planning must take into consideration increasingly heavy, excessive rainfall causing flooding, sea level rise with concomitant rivers rising, stronger hurricanes, increased tornados, as well as the very real threats from cyber (and physical) terrorism. Many customers are already moving toward Distributed Energy Resources (DER) and that trend is expected to increase.

### **SUSTAINABLE & RESILIENT INFRASTRUCTURE**

Due to the increasingly obvious impacts of Climate Change, all planning by the State and local governments must take into consideration the certainty of sea-level rise, increasing flooding and other predicted negative impacts. All such future planning must be guided by the latest scientific and fact based information from our governmental and University climate experts. I recommend that the Governor designate a specific entity mandated to this concerted effort of providing, in a on-going manner, the best possible climate impact information to New Jersey's governments departments/agencies/authorities/counties/municipalities.

### **OFFSHORE WIND (OSW):**

Thank you, BPU, for sending out the first RFP (with more to follow).

New Jersey has the best Eastern Seaboard OSW potential - we have strong winds and we are in the center of the Atlantic coast's most likely OSW locations. New Jersey's three remaining nuclear power plants are scheduled to close within 25 years. They currently supply about 40% of our electricity. OSW production will increase over those years and will replace nuclear as our base-load generation. The Board should layout a set time schedule for the OSW industry so they have certainty. This will allow the industry including their supply chain to plan and, with other State incentives, invest and locate their manufacturing facilities here. We have the

mid-Atlantic location, the needed infrastructure (rail, road and ports), universities with the expertise, and an educated work force.

#### BACKBONE TRANSMISSION LINE:

For the most efficient OSW, an offshore backbone transmission line must be built, and, as soon as feasibly possible. This line should be planned to run from northern Virginia to Monmouth County.

Obviously, there are a number of hurdles that must be identified and addressed ASAP. New Jersey must work with neighboring states (and neighboring governors) to have PJM include this OSW backbone transmission line as part of the PJM grid system. It should be treated the same way as other PJM transmission lines - those receiving the benefits, pay the costs. This is how Europe OSW operates (except for Great Britain) - their OSW transmission lines are treated as part of the entire grid and have RFPs for transmission separate from those of the OSW development projects.

Clearly, the first 1100 MW RFP must go forward with its own line to the onshore substation - possibly even the next RFP as well. But, I urge the BPU/administration to work hard to move the PJM backbone line for approval as quickly as possible. I recommend that, in the not too distant future, the BPU release an OSW time table that includes the future dates for OSW developers as well as the OSW backbone line. There are already 2 companies seeking to build the backbone line so, we know that there will be competition in pricing. I expect other companies would likely bid as well (mostly the experienced European developers).

The BPU should assure that their current on-going OSW study definitely includes the backbone transmission line. An OSW study without that inclusion would certainly be incomplete.

Per the legislation, all of New Jersey's ratepayers will be paying for the ORECs. A backbone line will benefit North Jerseyans and quite possibly help lower their congestion pricing.

Finally, over a decade ago, the BPU helped fund the "Power Buoy". In fact, it was tested back then off of Tuckerton and Atlantic City. Ocean Power Technologies, located in Pennington, manufactures the Power Buoy. That technology is now being developed for offshore of Oregon and Australia. The Power Buoy would not be cost effective here by itself due to the Outer-continental Shelf (and, thus, less ocean energy). However, the Power Buoy would be quite effective when connected to a backbone line - strung in between the turbines.

#### ALTERNATIVES TO TRANSMISSION & NON-WIRES ALTERNATIVES (NWA):

New Jersey should learn from other states, e.g. California, where NWAs are being studied. I urge the BPU to establish a strong policy (and then a rule) to mandate that, in the case of new transmission line proposals, the utility/developer must first consider NWAs that would meet the demand at the same or lower cost; demonstrate to the Board that no such lesser cost alternative is available, before the EDC is authorized to construct the new proposed transmission line. This would be similar to an environmental legal requirement that any project that would destroy forested wetlands must first demonstrate need; if need is proven, demonstrate that no viable alternative can be found.

The BPU should consider and avoid long-term rate impacts. By doing so, you can avoid future STRANDED COSTS. Clearly Distributed Energy Resources (DER) are becoming more and more popular for all customer classes. Customers want DER due to our increasing extreme weather and terrorism (cyber and/or physical). Other EMP areas such as significant increases in Energy Efficiency (retrofits, appliances, building codes, etc), Energy Storage, Geothermal, et.al. will significantly lessen the need for transmission lines in the not too distant future. It is very likely that a transmission line built today (and good for 40 + years) will NOT be needed in 15/20 years. Ratepayers should not have to pay for those future stranded costs most of which can now be avoided by NWAs.

The BPU should contract with an independent 3rd party or a New Jersey university to analyze whether an EDC's transmission proposal can be cost effectively met instead by NWAs, e.g DERs.

### **DISTRIBUTED ENERGY RESOURCES (DERS)**

#### **ENERGY EFFICIENCY (EE); APPLIANCE AND BUILDING CODE STANDARDS:**

EE must be a much higher priority.

The State might initially use tax incentives for builders and possibly rebates for appliances. But, when the prices come down (like they did with LEDs & PV), the most efficient/ effective appliance standards and building code standards should be adopted.

Require "smart" appliances for new appliances so EDCs can utilize for DR & peak-shaving. Work with ACEEE and others to have national smart appliance standards set.

DCA building codes should be upgraded for more stringent efficient construction. DCA should investigate international and other states' building codes for insulation, windows, etc. The NJ building codes should be amended to allow for ease of use for Community Solar, other renewables, energy storage, electric vehicles, etc. The State should consider something like the New York City "Stretch Building Code" or "beneficial strategic electrification.

Develop an EE requirement for RE programs, e.g. require a whole building energy audit before PV is installed.

The State might want to first target marketing and installation of EE and other energy programs to the most congested areas of the State so that electricity costs will be reduced for every customer in that congested zone.

Prioritize and possibly incentivize Community Solar as well as RE, EE and other DER programs in the most congested areas of the State to cut expensive peak load that impacts all customers. EDC must identify these most congested locations.

Review what other nations are doing, especially Europe. For example, for years now, most European hotels have the room card "key" also being used for the room's electricity.

The State should conduct "whole building" energy audits and not just take the "low-hanging fruit", e.g. lighting.

In older residential buildings, EE residential (single and multifamily) programs should be linked with the DEP lead paint remediation program so that lead paint remediation is done at the same time. An integrated, streamlined process should be established.

EE should be a competitive program. Utilities should not be permitted to rate-base most EE programs.

Develop “Pay as You Save” EE programs whereby the customer can pay off their EE costs via their EDC/Natural Gas utility monthly bill.

### SOLAR

New Jersey has grown from 6 Solar PV installations in 2001 to almost 100,000 now. However, the costs to ratepayers is far beyond where it should and could be. The BPU must lower these ratepayer solar costs as much as possible as soon as possible while allowing for the steady and continual growth solar PV in our state.

New Jersey voters routinely vote for Green Acres as well as Farmland Preservation. Because NJ is the most densely populated state and is predicted to be “grown out” by 2050, the State must be circumspect about where new solar PV is located. Also, for some time now, in several South Jersey rural areas, no new PV can be installed due to large “solar” farms” taking up all the capacity in the (farm community) local distribution system. The Energy Master Plan should not allow additional solar in rural areas unless the load served is located nearby. NJ does not need solar farms. We have plenty of roofs, parking lots, and brownfields where solar can be located near the load.

Utilities’ role should be limited to what DER competition cannot provide in order to allow for lower, unnecessary costs to ratepayers, i.e. not rate-based. I recommend that the Holding Companies of our EDCs and Natural Gas utilities use new (or existing) utility affiliates for DER such as New Jersey Resources does with their solar PV affiliate.

New DCA building codes should require that new homes be built pre-wired for solar, EVs and possibly Energy Storage (obviously with exclusion for sites where PV wouldn’t be viable - trees, etc.)

### COMMUNITY SOLAR (CS):

I have already submitted initial comments on CS and plan to submit comments on the proposed rules.

The BPU should review all of the EDCs’ Demand Charges & Energy Charges to ensure these charges do not negatively impact CS.

In the future, the State should consider requiring municipalities to have CS based upon their percentage of LMI residents (aka Mount Laurel housing).

### ENERGY STORAGE (ES):

EDCs should use ES as a vital part of their Distribution and Transmission (D&T) network, e.g. at substations, etc. to peak-shave (and be rate-based). I suggest that PSEG’s generation

affiliates use ES as part of their systems as well.

Research other ES technologies that can substantially reduce peak load such as Thermal Energy Storage (heat & air), ice storage, geothermal. Study Fairlawn's Ingersoll Rand's thermal technology used in Perth Amboy schools, Rutgers, Con Ed (NYC), Texas and Florida. This technology reportedly makes ice from tap water and can reduce cooling peaks by 20-40%. This would substantially reduce everyone's cost during our summer peaks. Because peak generation has a high carbon footprint, Thermal Energy Storage has a large carbon reduction potential and can help flatten the electric load.

Study geothermal for building heat and cooling - which has been functioning well at Stockton University for decades.

Consider performance-based approaches for DERs.

I may submit more detailed comments during the ES study's public input time.

### MICRO-GRIDS (MG):

During extreme weather events, MG allows for "islanding" - something that proved successful for several entities during Superstorm Sandy, e.g. Princeton University. The potential to island is also driving other customers to MG. The US Department of Defense has been utilizing MG for their facilities for decades.

New Jersey's first step regarding MG is on-going now - with the BPU reviewing 13 government applications for MG. Hopefully, the selected applications will be replicable for other entities. By 2030, many municipalities should have MGs for critical services, e.g police, fire, EMS, a community center or a school, etc. By 2050, community MG should be commonplace. Today, a MG typically has Combined Heat & Power (CHP) fueled by natural gas. However, thermal storage systems do exist for heat & cooling - they can also supply electricity. Ice storage and geothermal should be seriously considered as well.

While Government MG would clearly be part of their service (& taxes), they may want to partner with a developer. For other MG, the question arises as to who owns and who pays for the MG. The BPU should consider that going forward.

Data ownership should be owned by the customers. EDC's use should clearly benefit the customer.

### COMBINED HEAT AND POWER (CHP):

CHP is typically a major part of a Microgrid which for the most part utilizes natural gas. The possibility of them later converting to hydrogen should be explored.

The State should investigate Korea's utility scale hydrogen fuel cell that reportedly functions like a substation but will work when the grid goes down. The State should look at reportedly successful projects like Woodbridge, Connecticut and Long Island Power Authority's (LIPA) with a Purchased Power Agreement.

Veolia Energy has a long-lived MG in downtown Trenton that provides heat and cooling for

many of the State buildings via a huge underground holding tank under a State parking lot. It is my understanding that Veolia could also supply cheaper electricity to those same State buildings but, due to a State law, they must instead use the EDC's distribution lines and pay the EDC their (more expensive) tariff rates. That law should be changes as soon as possible so that the State will pay less for electricity in Trenton but also that future governmental and other MG will not have the same barrier.

### **REDESIGN OF OUR ELECTRICITY SYSTEM - GRID MODERNIZATION:**

A major goal of the EMP is to provide reliable, resilient electricity at least possible cost. Thus, the EMP must consider the long-term impacts of today's decisions. The EMP and the BPU must prevent over-building of the D&T system so that future stranded costs to ratepayers are lessened if not eliminated.

The future D & T system must be "smart" using the existing "smart" technologies, e.g. micro-phasers, smart inverters, smart appliances.

The modern D&T grid must have two-way communications so that EDCs (or possibly PJM) can control the electricity flows for smart appliances (as air conditioner cycling has been done for decades). This can then be used for Demand Response (DR) and Peak-shaving. They could also utilize EVs to cut the peak or for DR.

Within 2 years, smart inverter standards are expected to be adopted by the IEEE. New Jersey should include in this EMP the immediate adoption of those standards as soon as they are available.

### **ADVANCED METER INFRASTRUCTURE (AMI):**

The State should investigate any new technologies that would be more cost effective than AMI. I recommend researching other states' (e.g North Carolina, Kentucky) recent AMI decisions to determine whether AMI is needed or if there are other less expensive ways to learn of outages, etc. I note that PSE&G's PV "solar on a stick" does already informs them of outages via each panel's individual inverter.

There are other benefits to AMI, e.g. useful data, so a review of other states will let you know how that need might otherwise be handled more cost effectively. Serious consideration should be given to the union's concerns regarding cost to ratepayers and safety to the public.

If AMI ("Smart Meters) is authorized but the BPU, "Smart Tariffs" should be mandated as well. A smart meter with a dumb tariff does nothing for the customer - the benefits go mainly to the EDC (reduced labor costs and rate-basing of the AMI).

Data ownership should be by the customer and not the EDC. The critical issue of who has access to that AMI data must be studied/determined. Likely, the customer should make that informed decision.

### **MONITIZING DER:**

It is critical for New Jersey to work closely with OPSI States (and the Governor with other OPSI Governors) to optimize the PJM Capacity Market to benefit DER. FERC and PJM have vital decision-making authority in this extremely important arena.

Recent decisions and pending MOPRs bode very badly for DER to achieve financial recognition for the benefits provided to the Grid. DER should be allowed to bid into the PJM Capacity Market yet a recent FERC decision will completely cripple this effort.

The NJBPU along with many other states oppose this FERC action. The BPU's staff (and other experts) have a much better understanding of the current dire situation than I. There is a need right now to immediately ratchet up action by all relevant parties.

DER help avoid other costs (peak-shaving, DR) and should be properly rewarded. More DER will occur when monetary benefits are more obvious and available.

Aggregation of DER should be encouraged and streamlined processes should be created to better allow for aggregation.

## **REGULATORY REFORM**

We have know for 15 years that "Regulatory Reform" of EDCs is needed. How to do that best is still an open question. You should closely review other states' actions but also consider other new ideas, e.g. consider EDCs might earn a Rate of Return (ROR) on operations in addition to/or in place of capital investments. National Think Tanks like the Regulatory Assistance Project (RAP), The Rocky Mountain Institute and the National Labs have been working in this arena of Regulatory Reform for more than a decade now.

New Jersey should study states that have successful DER programs and determine what NJ laws or regulations need to be changed. For instance, as mentioned above, a NJ law prevents downtown Trenton's State Veolia MG from using less expensive self-generated electricity. This law should be changed. In addition, reportedly, ice storage could help dramatically reduce peak, however NJ's incentive structure does not make the economics possible. NJ should review the incentives given in NYC, Texas and Florida and, hopefully, then make the necessary changes in NJ statues/regulations. This would likely help hospitals, universities and schools cut their peak.

Like NWAs , DER RFPs could be on-going incentives to cut peak loads - NJ's most expensive electricity.

## **TRANSPORTATION**

We all know that, currently, transportation accounts for over 40% of our State's carbon emissions. New Jersey must address that head on. Heavy duty diesel vehicles must be eliminated as quickly as possible due to the known significant public heath impacts (asthma & deaths) of diesel generated Particulate Matter (PM; "black carbon"). DOT must engage actively in this clean energy effort. Replacement New Jersey Transit (NJT) diesel buses should be a high priority and occur in a structured way, e.g. first in our bus hubs (Newark & Camden) and in the other cities with the most PM. All new buses should be electric, hydrogen or possibly LNG.

School bus fleets should be electrified over time. Retire the oldest, dirtiest buses with clean buses. Replace all school buses with clean ones.

Additional light rail like the Lindenwold High-speed Line, River-line and Newark's light rail should be planned for our most congested areas.

Efforts should be first concentrated on diesel vehicle fleets, e.g. utilities, Fed Ex, etc. - especially those that serve our urban areas. Then expand to other fleets. Concentrate on EV fleets - especially those that serve in our urban areas.

The **PANYNJ** should immediately study how to reduce diesel emissions by electrification in the port area and provide, as a high priority, resources to eliminate diesel emissions from the port - from equipment, trucks and ships. The PA should research world-wide methods for funding, e.g. Los Angeles' container fee. No New Jersey funds (e.g. SBC, RGGI, Volkswagen monies) should be used for this effort. Their ban on older diesel vehicles should be re-instituted. Within a year the NYNJPA should develop a plan with a timetable to make the Port emission free by 2030.

Funding sources other than the Societal Benefits Charge (SBC) should be utilized as much as possible. Tax incentives should be used instead of SBC grants for EVs, etc. There should be NO stranded costs.

New Jersey should practice "Smart Growth" policies: walkable (& bike-able) mixed-use communities to eliminate unnecessary vehicle trips. DOT needs to work with DCA and DEP on a Smart Growth Plan. How to do "Smart Growth" well has been available for decades. New Jersey's universities have expertise as does non-profit organizations such as Sustainable Jersey.

DOT should apply road construction methods which will lessen idling in order to lower emissions, e.g. whenever possible have right hand turn lanes - especially for any new roadway construction or when new building construction is done along a roadway. Regulations should be developed so that municipalities & counties require left and/or righthand turn lands as part of new construction. New street lights should be "smart" to lessen idling. Businesses should stagger closing hours. Again, this information is readily available from some Universities and non-profits like the Tri-State Transportation Campaign.

We have carbon pricing on electricity and natural gas, via the SBC, discussion should be held with RGGI States about the possibility of carbon pricing for gasoline. This would clearly require legislative action but because transportation is our #1 cause of GHG, this problem must be addressed head on.

#### ELECTRIC VEHICLES:

Private investment in charging stations should be the norm. Installation of EV charging stations should be competitively bid. There is, reportedly, a Venture Capitalist market interested in investing in EVs. EDA should make it a priority to identify those investors. The EDCs will already be making significant revenue increases in electricity sales from EVs' charging. Utility affiliates can participate in RFPs but utilities should not be allowed to rate-base EV chargers. EDCs could rate-base other EV infrastructure, e.g. the electric lines needed



due to the increased load. Possibly, EDCs might be authorized to install EV chargers for LMI multifamily buildings if there is no competitor willing to install but they must have to petition the BPU to do so.

While “range anxiety” is real, the current high cost of “fast” chargers should not have the utilities install them on public roadways and then rate-base them. Fast charging devices are extremely costly now but prices will clearly move downward the more EVs are sold around the country. Rate-basing would be unnecessarily costly to the customers. Market forces should provide the investors.

DOT/NJ Turnpike should first competitively bid “fast” chargers along the Turnpike, Parkway, Expressway so that every rest stop has fast chargers available. EDCs should not be able to bid but their Utility Affiliates may do so. First, start the process on those major tollroads. When “fast” charger prices decline (in a few years), DOT should issue RFP(s) for other major State roadways, e.g. Routes 1, 22, 295. However, if there appears to be a real competitive interest sooner, DOT could issue an RFP for fast chargers on the major State roadways sooner. I suggest waiting until after the tollroads RFPs demonstrate that there is a competitive market and also demonstrate that New Jersey is serious about this effort.

Use federal monies, tax incentives, etc. as much as possible. Avoid using SBC and other ratepayer monies.

Give tax incentives, and possibly low or no interest loans, for gas stations and auto repair shops to install “fast” chargers. This will allow that gasoline service sector to continue to do business into the future as they gradually eliminate their gasoline sales and increase electricity sales.

Tax incentives could be given to Commercial & industrial charger installations. All EV Chargers should not be included in property tax assessments for a certain definite period of time - possibly 10 years.

Streamline permitting requirements statewide, e.g. siting, local inspections, etc. The State should draft model permitting guidelines for municipalities.

Review each EDCs Demand and Energy Charge to ensure that it doesn't disadvantage EVs (& Energy Storage).

EV tariffs should be similar state-wide - quite likely Time-of-Use rates (TOU) at least initially. But the BPU should investigate world-wide EV rate structures and tariff designs. Consider, and possibly implement, the “retail credit for export” tariff.

Raise the “fast track” interconnection standard.

Streamline purchasing requirements by government entities in place of RFPs for every purchase. Allow a waiver of the time requirement of the government contracting law. Consider a “cash for clunkers” program to get the most polluting vehicle off the road.

Require stricter emissions requirements for all off the road vehicles, e.g. dirt bikes, jet skis.

Building codes should be amended to require EV wiring (not the chargers) in place for all new

residential and C&I buildings.

Continually research internationally how EV batteries can be used for Battery Storage integration into the distribution system (“vehicle to grid”, V2G). Work with other state, e.g. Delaware, to be able to monetize - for peak shaving or DR - by methods such as aggregation. Also, review how best to utilize “used” batteries - currently they can be used as part of a battery/energy storage (the still 60% of usable battery remaining.)

### **FUTURE SOLAR; CONVERSION of SREC PROGRAM:**

As mentioned above, the current SREC program must be retired now as it is too costly for the ratepayers. When the SREC was first established, the BPU recognized that, when the New Jersey solar market was successful, the SREC would have to be eliminated. The SREC has well served its intended purpose. New Jersey now has a vital, growing solar PV market. The SREC must now go in peace.

The State should quickly move away from costly (to the ratepayers) net-metering and most likely to a simpler Value of DER similar to California. Possibly grandfather the existing residential PV customers.

The SREC successor program should include differentiated incentives to support low and moderate income residential customer solar adoption as well as affordable housing operator solar adoption.

The SREC successor should also be structured to drive access, ownership, and job opportunities for environmental justice communities and communities of color.