September 5, 2018

Kenneth Sheehan
Director, Division of Clean Energy
New Jersey Board of Public Utilities
44 S. Clinton Avenue
Trenton, NJ 08625

Dear Mr. Sheehan,

Enclosed please find preliminary comments in response to the discussion questions released by the Energy Master Planning Committee in advance of this Friday's workshop. These comments outline what I plan to present on behalf of the Coalition for Community Solar (CCSA) at the Energy Master Plan stakeholder meeting on Friday September 7th, 2018. CCSA plans to file extended comments on October 12th, 2018. In the interim, please do not hesitate to reach out with any questions.

Sincerely,

Brandon Smithwood

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General

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

   CCSA withholds comments for the workshop but may comment in written comments to be filed on October 12th.

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

   CCSA withholds comments for the workshop but may comment in written comments to be filed on October 12th.

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

   Multiple studies have shown the technical feasibility of getting to high penetrations of renewable energy[1]. One study, by Professor Mark Jacobson of Stanford University outlined resource portfolios for 100% renewable energy in 2050 for each of the fifty United States. This roadmap assumes that over 30% of New Jersey's generation comes from in-state solar generation as part of a 100% renewable energy portfolio[2]. This includes placing solar on approximately 2/3rds of the technically-feasible rooftop space in the and parking structures on and by residential and commercial buildings. By 2050, a full 27% of generation is assumed to come from larger solar projects not sited on or near buildings. Currently the installed solar in the state produces slightly less than 4% of the state's electricity[3].

   The challenges to achieving the Murphy Administration's clean energy goals are political and other non-technical challenges. First is having an engaged citizenry who feel invested in the transition to clean energy. Second is ensuring that rules allow for the necessary scale of solar capacity needed to result in a decarbonization of the electric sector. With strong policy design, improved interconnection, and thoughtful project siting rules community solar is well situated to help meet this need.

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[1] See, for example, the National Renewable Energy Laboratory's *Renewable Energy Futures* series of reports (https://www.nrel.gov/analysis/re-futures.html) and Professor Mark Jacobson's 100% clean and renewable wind, water, and sunlight (WWS) all-sector energy roadmaps for the 50 United States (*https://web.stanford.edu/group/efmh/jacobson/Articles/I/USStatesWWS.pdf*)

[2] Jacobson, P. 2099

[3] https://www.seia.org/state-solar-policy/new-jersey-solar

Many customers will need to invest in- or subscribe to- their own renewable energy generation in order to deploy the necessary solar generation. Luckily, there is strong demand for renewable energy generation: 89% of respondents to a recent Pew poll said they want to see more energy from solar[4]. We can see this demand in New Jersey with nearly 100,000 customers who have already adopted a solar system[5].

The recently completed Wood Mackenzie report *The Vision for U.S. Community Solar: A Roadmap to 2030*[6] develops a vision for community solar in New Jersey over the coming decade. The analysis included a robust evaluation of the total addressable market. The report concluded that by 2030, community solar in New Jersey could serve 219,000 to 410,000 unique subscribers at a capacity of 2.3 to 3.3 GW. There is therefore ample market demand for community solar which could help contribute to the 50% by 2030 goal in the near-term. The study did not examine the additional scale that could be pursued to reach the 2050 goal.

Community solar can also overcome non-technical barriers to reaching the needed solar deployment. While there is significant technical potential for rooftop solar, many buildings will have non-technical constraints to adopting solar, such as the building being occupied by tenants rather than the owner. Census data reveal that of the 3.19 million occupied housing units in New Jersey, 1.62 million or 51% of New Jersey residents lack access to solar simply because they are renters or live in multifamily buildings. Community solar is the choice for these customers.

Remaining challenges will include permitting and other land use challenges and technical challenges, specifically interconnection. Those challenges are discussed below or will be addressed in response to future Energy Master Plan workshop discussion questions.

Transition and Technology

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

   In the near-term, the community solar pilot program being developed at the Board of Public Utilities is key to establishing the market for community solar and attracting

[4] http://www.pewinternet.org/2018/05/14/majorities-see-government-efforts-to-protect-the-environment-as-insufficient/ps-05-10-18_report-07/

[5] New Jersey Board of Public Utilities, Office of Clean Energy, "Solar Frequently Asked Questions". Data current as of last update (July 31st, 2018). Available at: http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-transition/solar-market-faqs

[6] https://votesolar.org/policy/policy-guides/shared-renewables-policy/csvisionstudy/

investment to the state. This pilot program can make an initial contribution toward 2030 goals and create a pathway for achieving the potential for community solar in the state.

Analysis to be released shortly by Vote Solar and CCSA will show that an initial 450MW community solar pilot program can begin this transition to a clean-energy electricity system with substantial benefits to the state and at minimal cost.

Specifically, the forthcoming analysis finds that a 450 MW initial pilot program would yield:

- **1,778 sustained full-time jobs** during construction and an additional 41 sustained full-time jobs associated with operations and maintenance.
- **$414.7 million** in earnings for those employed.
- **$797.9 million** in local economic benefits for the state, excepting local tax revenues.

This analysis will furthermore demonstrate that this initial 450MW initial program can yield the aforementioned benefits at minimal cost: 22 to 42 cents per month for the average residential customer.

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

   CCSA withholds comments for the workshop but may comment in written comments to be filed on October 12th.

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

   CCSA withholds comments for the workshop but may comment in written comments to be filed on October 12th.

State Policy

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

   CCSA withholds comments for the workshop but may comment in written comments to be filed on October 12th.

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

Below and in response to other questions, we provide comments on practices that increase solar development on brownfields, landfills, and other "blighted" areas. However, we believe it is first important to define these terms, particularly brownfields. For the purpose of encouraging renewable energy development, "brownfields" targeted for development should include "known contaminated sites" as well as contaminated areas and/or brownfields that have achieved "No Further Action" or "Response Action Outcome" status in their remediation process should still be considered brownfields for the purposes of solar development.

In addition to these best practice requirements to regulate development mentioned in response to Question 13, we also recommend that the New Jersey Board of Public Utilities consider, as part of the development of the SREC successor program, establishing positive compensation adders for siting on rooftops (including schools, commercial, and multi-family buildings), brownfields, landfills, and parking lots to proactively encourage a diversity of project siting by recognizing that some forms of siting inherently involve more risk and expense given their often limited and challenging physical limitations, history, and interconnection constraints, but are in the public good and thus should be encouraged. Massachusetts, for example, has compensation adders for projects that are sited on brownfields, landfills, parking lots, and rooftops, and also for floating projects and dual use agricultural projects.[7] New York has recently adopted its first adder system focused on brownfields, landfills, and parking lots.[8] The adders range from $0.02-0.06/kWh/year and $0.10-.30/Wdc respectively.

These adders reflect the incremental costs of developing on these sites. Not only is the volume of available and usable rooftops, parking lots, brownfields, and landfills more constrained than it first appears when you consider usable space, landowner interest and property values, excessive contamination or unclosed sites, but most importantly development of these sites can add between $0.05-0.08/kWh of cost to projects to deal with additional equipment costs, installation work, and financing costs.[9,10]

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[7] Final MA SMART program regulations, MA DOER, September 2017, https://www.mass.gov/files/documents/2017/10/16/225cmr20.pdf

[8] New NY MW Block Design, NYSERDA, June 2018, https://www.nyserda.ny.gov/All-Programs/Programs/NY-Sun/Contractors/-/media/EA9ED9525B744FFCB3D59AE83FFF85A2.ashx

[9] While some previous reports like the *New Jersey Department of Environmental Protection Solar Siting Analysis Update* (December 2017) have implied that NJ could site all needed solar in urban and suburban areas, this conclusion was reached without proper analysis of costs due to usable space constraints, site control limitations, interconnection technical feasibility etc, and also didn't address the additional cost.

[10] Standard additional costs for landfills and brownfields include physical constraints that require ballasted systems instead of driving piles, raised non-trenched electrical conduit and wire runs, more expensive stormwater requirements, and increased financing costs due to project complexity and risk. For rooftops, the additional costs are primarily replacing roofing, usable space constraints, and increased financing costs due to risk and complexity of site shading, access, maintenance, and building owner needs. For parking lot structures, costs are usable space

There are also policy improvements regarding liability and other risk factors, that would encourage more development on these locations. First, concerning landfills and brownfields, the State should, through the Department of Environmental Protection, have in place a clear, definable path for developers to gain comfort letters at brownfield sites for which full closure has yet to be gained through the NJDEP Site Remediation Program (SRP). This proposal is well warranted for sites which have already begun the process and where solar is expected to be part of any final closure.

The State, through the Solar Act (L. 2012, c. 24) under Subsection t, already directs developers towards brownfields and landfills, but it is not clear as to how developers can help facilitate the closure of open brownfield sites and landfills without taking on the level of liability for which investors often refuse to finance. Having comfort letters ahead of No Further Action (NFA) letters indicating that the State will hold harmless the developer with respect to future liability concerns based on previous contamination will help facilitate financing that will be needed to develop underutilized land for solar.

The State could also look to amend the Technical Requirements for Site Remediation (Technical Requirements), N.J.A.C. 7:26E-3.12 and 4.7) and more specifically the Historic Fill Material Technical Guidance to allow for solar to be sited on sites that are assumed to be underlain by historic fill without the need for drawn out investigation and remedial action by simply utilizing the site design itself as the engineering and institutional controls required as part of the remedial action pursuant to N.J.A.C. 7:26E-5.4 and to N.J.A.C. 7:26C7 and placing a deed restriction on the property.

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

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Planning and Zoning

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

The carbon benefit of electric vehicles and other electrification (e.g., building heat) is dependent on the carbon content of the generation being produced during the times those vehicles are charging or that electricity is otherwise being used. Distributed solar and storage along with incentives for aligning charging with times of the cleanest generation, can maximize carbon emissions reductions while also minimizing ratepayer costs. Indeed, as penetrations of electric vehicles and other electric end uses increases,

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constraints, additional significant structural costs for raised panels and additional snow/wind loading, and increased costs for non-trenched electrical conduit and wire runs.

distributed solar and storage can help reduce the amount of infrastructure utilities need to build to meet growing electricity demand.

In addition, transportation electrification and distributed generation would both benefit from modernized distribution planning and investment. Distribution planning processes that account for distributed energy resources can identify locations in the distribution grid where proactive upgrades can be made to accommodate both new loads (EV charging) and new generation (solar PV). Such planning, and greater transparency about the distribution system, can also help developers of this clean energy equipment know where the best locations for installing their systems are. To date, Atlantic City Electric is the only utility in the state with hosting capacity maps that give developers indications of where there is capacity to connect new projects to the distribution grid.

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

Local communities already have a significant role to play in energy planning, with the ordinances adopted by local governments playing a predominant role in determining the siting and permitting of solar generators. The state could help best practices disperse around the state through guidance to local governments. CCSA will provide further comments on October 12th .

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

    CCSA withholds comments for the workshop but may comment in written comments to be filed on October 12th.

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

    As noted above, local communities already have a significant role to play in energy planning, with the ordinances adopted by local governments directing siting and permitting of solar generators. Generally, state and local agencies should revisit land use rules to ensure thoughtful siting of projects on both already-disturbed and "greenfield" sites.

    The pending community solar pilot program is a good opportunity to explore new land use requirements and practices. Development should be allowed on certain agricultural and other vacant land when it is consistent with current New Jersey and federal regulations (i.e. respecting and avoiding wetlands, conservation areas and parks) and as

long as the projects follow a set of mandatory best practices for construction, decommissioning, and complementary use that have been successful in other states.

These mandatory best practices include requirements site preparation and installation, decommissioning requirements to return sites to their original or better conditions and the requirement for decommissioning bonds to ensure this.[11,12] These requirements can be coupled with requirements for complementary uses like pollinator friendly design and plantings when on or near agricultural land. With these best practices, solar development can be done in a responsible manner with no harm and in fact often benefit to soil health, and become a land preservation tool, allowing low impact development in comparison to the many more intensive types of development that are common as farms and other conservation lands transition from older generations.

In addition, siting on agricultural and other open land extends the economic benefits of solar development to a wider class of landowners, especially farmers or other rural landowners for whom land lease payments from solar development provide a steady, reliable source of income that can mitigate some of the inherent risk associated with agriculture and stabilize a farm's finances, critically allowing cultivation on other parts of a landowners' property to remain financially viable and thus for farms to continue operations.

CCSA will provide further comments on October 12th .

Economic Growth and Workforce Development

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

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

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[11] For example, mandatory best practices for site preparation and installation are often in regards to minimizing soil disruption and hydrological impact, ensuring proper spacing of the solar and minimization of concrete to allow most of the land to remain completely pervious, and minimizing tree removal and pairing this with tree planting etc.

[12] Such best practices include limitations on concrete and soil disruption, minimal trenching and easily removable conduit and wire design, avoiding wildlife and other critical habitat such as connected wildlife corridors, and decommissioning requirements that also address site-specific land use concerns

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

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Environmental Justice

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

Community solar is an important tool for expanding access to low- and moderate- income individuals within and outside of overburdened communities. More detail is provided in our response to Question 18 below.

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

Community solar is an important tool for expanding clean energy benefits to low- and moderate- income individuals within and outside of overburdened communities. However, to be effective community solar should be part of a suite of tools for reaching these populations.

There are a number of barriers that make it more difficult for community solar programs to reach low-income customers, and supplemental policy mechanisms are generally required to achieve equitable opportunities for low-income customers to participate.

Financing is currently the most significant barrier to inclusion of low-income customers: Low-income customers face financial barriers to program participation, and third party-owned projects are typically required to identify subscribers with good credit in order to access financing at a reasonable cost. For this reason, policy mechanisms that make low-income subscriptions financeable and affordable – such as a loan loss reserve, having a public agency act as the counterparty for subscription agreements and reducing subscription costs through incentives – are the most important. It is also possible that the utility could take on the role of collections, de-risking the subscriptions of these customers which are otherwise often viewed conservatively by financiers as zero-dollar sources of project revenue.

Incentive resources are likely available through several current and pending sources of funding in the state. These sources include:

- the BPU Clean Energy Program where funds could be reallocated from funds currently reserved for low-income funding;
- BPU RGGI funding: the Economic Development Authority gets 60% of RGGI funding which it may use for incentives or a green bank; and

- The SREC successor program could also provide for differentiated incentives for low income projects.

Other mechanisms such as program goals, and education and outreach can also promote program accessibility for low-income customers. For more examples and guidance, see 1. Low-Income Solar Policy Guide developed by GRID Alternatives and Vote Solar, 2. Shared Renewable Energy for Low- to Moderate-Income Consumers: Policy Guidelines and Model Provisions developed by the Interstate Renewable Energy Council, 3. A Directory of State Clean Energy Programs and Policies for Low-Income Residents developed by Clean Energy States Alliance.

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

See response to Question 18 above.