October 12, 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 the final comments of the Coalition for Community Solar Access (CCSA) in response to the discussion questions released by the Energy Master Planning Committee in the Clean and Renewable Power and Building a Modern Grid stakeholder meetings. These comments supplant those submitted to you by CCSA on September 5th. Please do not hesitate to reach out with any questions.

Sincerely,

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Introduction

CCSA is a national coalition of businesses and non-profits working to expand customer choice and access to solar for all American households and businesses through community solar. Our mission is to empower every American energy consumer with the option to choose local, clean, and affordable community solar. We work with customers, utilities, local stakeholders, and policymakers to develop and implement policies and best practices that ensure community solar programs provide a win for all, starting with the customer.

CCSA appreciates the opportunity to participate in the September 7th Stakeholder Meeting and provide comments on select discussion questions which relate to community solar and its important role in achieving the state's clean energy and climate goals, including reaching the target of 100% clean energy by 2050.

Community solar creates is a tool for deploying clean energy generation in the state and thereby support jobs and revenues to local communities. However, community solar also provides the opportunity to ensure that all New Jersey residents feel invested in- and a part of- the transition to a clean energy economy. Community solar can play an important role in the next three years through the pilot program and out to 2030 and beyond through the permanent program. Recently analysis described in the comments that follow shows that a 450 megawatt initial pilot program can support nearly 1800 jobs and $800 million in local economic benefits; by 2030 community solar could support up to 400,000 New Jersey residents through 3.3 gigawatts of capacity.

Importantly, low- and- moderate income customers and residents of environmental justice communities who may not be able to access the benefits of clean energy through rooftop solar can access those benefits through community solar. The pilot program draft regulations issued on October 1st propose an ambitious goal of 40% of the program serving low- and moderate-income customers. To reach this goal there are a number of financing mechanisms the state can utilize to ensure that those projects are financeable.

Research by our national laboratories and academics show that a 100% clean energy grid is technically feasible. The challenge will be overcoming the challenges to *deploying* the clean energy projects needed to meet the goal. Both siting solar projects and interconnecting them to the distribution grid will be challenges, but ones which are clearly surmountable.

Deploying sufficient renewable energy projects to meet the state's goals will involve maximizing the available roof space, parking spaces, brownfields, landfills and other already disturbed sites; but that will not be enough. Ensuring that projects can be developed on greenfield locations using best practices and within reasonable limitations will be critical to reaching the state's goals. Dissemination of thoughtful model zoning ordinances and reductions in local permitting are one tool for ensuring projects are sited in a thoughtful and cost-effective way. The state can

also use the revision of the Solar Renewable Electricity Certificate program to prioritize development of solar energy on rooftops, carports, areas in need of redevelopment, and other disturbed sites.

New Jersey's interconnection processes also need revisions. Lack of clarity about the distribution grid's ability to host solar projects as well as outdated standards and processes will make it both more expensive and more difficult to develop projects. Improving the interconnection process is a costless opportunity to bring renewable energy online at lower cost.

Comments on the Clean and Renewable Power Stakeholder Meeting Discussion Points

General

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. The 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]. The roadmap assumes solar is placed on approximately 2/3rds of the buildings in the state where it is technically-feasible to site solar; this technically-feasible space includes not only roofs but parking lots and parking structures on and by residential and commercial buildings. However, even with this generous assumption about solar being sited on and near buildings there is not enough opportunity in the state to meet the 100% goal. By 2050, a full 27% of generation under Professor Jacobson's 100% renewable energy portfolio is assumed to come from larger solar projects not sited on or near buildings. Currently all installed solar in the state produces slightly less than 4% of the state's electricity[3].

   Given the studies that have been conducted by our national labs and academia it is clear that the challenges to meeting 100% clean energy are not technical. The challenges to achieving the Murphy Administration's clean energy goals are about engaging the citizens of New Jersey in the transition and getting the rules right to deploy the renewable energy generating capacity needed to meet the goals. With strong policy

[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

design, improved interconnection, and thoughtful project siting rules community solar is well situated to help New Jersey's citizens feel invested in the transition to a clean energy economy.

Many customers will need to invest in- or subscribe to- their own renewable energy generation in order to deploy the solar generation necessary to meet the state's goals. 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 uniquely able to serve these customers.

Remaining challenges will include permitting and other land use challenges and interconnection. Those challenges are discussed below in response to other 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?*

[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/

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 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[7] released by Vote Solar and CCSA shows 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 demonstrates 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.

State Policy

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

   As noted in response to question 3, developed, undeveloped/greenfield, brownfield, landfills and other types of sites will be needed to deploy sufficient renewable energy. Below and in response to other questions, we provide comments on practices that increase solar development on brownfields, landfills, and other "blighted" areas.

   It is important to define 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.

[7] Vote Solar, *Community Solar: Ready to Work for New Jersey* https://votesolar.org/usa/new-jersey/updates/cs-pilot-can-create-800-million-dollars-benefits/

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.[8] New York has recently adopted its first adder system focused on brownfields, landfills, and parking lots.[9] 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.[10,11]

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.

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

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

[10] 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.

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

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.

Planning and Zoning

8. 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, 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. CCSA is encouraged that the draft community solar regulations are requiring all utilities to develop such maps for the use of projects in the pilot program.

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

Local communities have a significant role to play in energy planning, with the ordinances adopted by local governments directing siting and permitting of solar generators. CCSA recommends that the state create a model ordinance for local governments to use in developing zoning rules for solar systems, particularly given the recent dearth of larger, ground-mounted distributed generation projects in the state which local governments may therefore lack experience zoning and permitting. More generally, state and local agencies should revisit land use rules to ensure thoughtful siting of projects on both already-disturbed and "greenfield" sites.

Providing a model solar zoning ordinance to local governments

Many local governments have limited experience and exposure to solar projects, and therefore, have either no established regulation for permitting solar projects within their jurisdictions or misguided or outdated understanding of the project development practices and technology. A state-sponsored initiative to develop guidance and standardized language to incorporate into local governments' existing zoning ordinances would support the rapid adoption of necessary amendments to local zoning ordinances to meet New Jersey's renewable energy goals.

New York's State Energy Research and Development Authority (NYSERDA) has implemented such a model ordinance and is an example of a model ordinance that could be used for New Jersey's local governments[12].

In addition to local governments improving their zoning and permitting processes, the state should examine its own regulations which impact local siting decisions. For example, a developer could be developing a solar project on private land adjacent to State land, in order to connect into the grid the developer's only possible option may be through State land. In this example, the solar developer would need to file a Diversion Application which is a complex process and typically takes 12-14 months to complete.

Exploring new land use practices

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 local, state, New Jersey and federal regulations (i.e., adhering to laws and regulation protecting wetlands, 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 best practices include requirements site preparation and installation, decommissioning requirements to return sites to their original or better conditions and

[12] NYSERDA's model solar ordinance is available via the following link: https://www.nyserda.ny.gov/-/media/NYSun/files/Model-Solar-Energy-Law-Guidance-Document.pdf

the requirement for decommissioning bonds.[13,14] These requirements can be coupled with 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.

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.

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[13] 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.

[14] 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

Financing is currently the most significant barrier to inclusion of low-income customers. For example, the Community Solar Energy Pilot Program now being developed at the BPU sets a goal for low- and moderate-income (LMI) participation that is easily the highest in the country. At least 40 percent of total annual capacity must be allocated to LMI projects, with an additional 10 percent of total annual capacity able to be set aside for low-income community solar projects. Yet 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. CCSA is concerned that this pilot program, and particularly the LMI goals, will be unsuccessful unless this challenge is addressed.

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.

The creation of a New Jersey Green Bank (or expansion of duties of an existing agency) to accelerate clean energy investments – with programs dedicated to engaging LMI communities – merits particular attention. New York State initiated its community solar program (called "Community Distributed Generation") in 2015. Recognizing both the need for LMI participation and the challenges of securing financing on behalf of LMI customers, the New York State Energy Research and Development Authority (NYSERDA) recently created its Low-Income Community Solar Initiative, aka "Solar for All," program. Under this framework, NYSERDA will enter into long-term contracts that match solar facilities with customers participating in low-income heating assistance programs. The arrangement can successfully attract project financing because the offtaker is a credit-worthy government agency that acts an intermediary between the solar facility and its LMI customers. Among its other services, a New Jersey Green Bank could provide this kind of credit backstop and significantly expand access to clean energy in LMI communities.

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.

Comments on Building a Modern Grid Stakeholder Meeting Discussion Points

4. What integrated distribution planning is needed in a modern grid?

Improved distribution system transparency and planning can bring numerous benefits

Utility distribution planning has historically been a "black box" from the perspective of ratepayers, regulators, and distributed energy resource providers. Enabling cost effective modernization of utility equipment, using customer-driven distributed energy resources in lieu of more costly- and less resilient- utility distribution equipment, avoiding unnecessary utility expenditures, and easing interconnection of distributed energy resources such as solar, batteries, and electric vehicle chargers requires greater transparency about the needs and limitations on the distribution system. This information historically has only been visible to utility distribution engineers and, in a limited fashion, to regulators and intervenors in utility rate cases. While still in their early stages, California's Distribution Resources Planning process and New York's Distribution System Implementation Planning process provide models for New Jersey to learn from. As required in the draft community solar regulations, hosting capacity maps can be one form of greater transparency and, if done well, can dramatically improve the interconnection process, reducing costs to solar deployment.

Improved interconnection standards, tools and processes are critical to overcoming barriers to deploying solar

New Jersey has historically had strong interconnection rules. However, these rules have not been updated since 2012 and several significant deficiencies exist. These include technical standards and other modifications in new standards adopted elsewhere around the country that accommodate new technologies, such as storage, and reflect evolving knowledge of best practice in interconnection.

The interconnection process is also challenging. Typically a larger distribution-system-interconnected project will need to apply for interconnection study through the regional grid operator, PJM, even though the utilities do the work of studying their system to determine whether, and at what cost, a project can interconnect. Project developers also struggle to understand where their project stands in the interconnection process given the lack of a transparent interconnection queue.

The community solar pilot rules should be a catalyst for improved interconnection rules and practices by requiring upgrades in both standards and procedures. The proposed rule's requirement to create hosting capacity maps is one important step but a more comprehensive set of reforms are needed such that each distribution utility in the state is conducting an interconnection process that has the following elements:

1. First come first serve approach and a transparent queue of projects
2. Sequential study
3. Pre-application reports available before hosting capacity maps are on-line so developers can get basic technical information on substation and feeder capacity without having to enter the queue
4. Maturity requirements to enter the queue
5. Reasonable timelines for both developers and utilities
6. Updated modern technical screens and standards for project study
7. Clear communication of the application of those standards and study outcomes
8. Non 100% payment structure - 25% to show commitment and 75% after a certain period of time

Conclusion

CCSA appreciates the opportunity to participate in the Energy Master Planning process and looks forward to reviewing the draft Plan when it is available next year.