STATE OF NEW JERSEY
Board of Public Utilities
44 South Clinton Avenue, 9th Floor
Post Office Box 350
Trenton, New Jersey 08625-0350
www.nj.gov/bpu/

NOTICE[1]

DOCKET NO. QO20020184

New Jersey 2019/2020 Solar Transition

Solar Successor Program: Staff Straw Proposal

Pursuant to the "Open Public Meetings Act", N.J.S.A. 10:4-6 et seq., Staff of the New Jersey Board of Public Utilities ("NJBPU" or "Board") invites all interested parties and members of the public to participate in a stakeholder meeting to discuss the design of the Solar Successor Program, pursuant to P.L. 2018, c.17 of the Clean Energy Act (Clean Energy Act).

Background

Pursuant to the Clean Energy Act, the Board is conducting a comprehensive revision of New Jersey's solar energy incentive programs (2019/2020 Solar Transition). This transition began with the closure of the Solar Renewable Energy Certificate (SREC) Program on April 30, 2020, upon the State's attainment of 5.1% of kilowatt-hours sold from solar electric generation facilities. The Board established an interim Transition Incentive (TI) Program in December 2019 to serve as a bridge between the SREC Program and the forthcoming Successor Program.[2] The final step in the evolution of New Jersey's solar incentive program is the creation of a long-term, durable solar incentive program (Successor Program) that puts the State on a path toward meeting its goal of 100% clean energy by 2050, balances ratepayer impacts, and supports a thriving and stable solar industry.

Successor Program Straw Proposal

Building upon the multi-year 2019/2020 Solar Transition process, including past stakeholder meetings and reports, Board Staff has developed the ***New Jersey Solar Successor Program Straw Proposal*** (Straw Proposal). The Straw Proposal details Staff's preliminary recommendations for the Successor Program, including program design and implementation,

[1] Not a Paid Legal Advertisement

[2] Further information regarding the Solar Transition process is available on the Clean Energy Program website: https://njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-proceedings.

calculation of annual megawatt targets, and calculation of the statutory cost cap. It also launches the stakeholder process for the development of a permanent Community Solar Energy Program for New Jersey. The Straw Proposal is organized as follows:

- Section I: Introduction and Summary of Straw Proposal Recommendations
- Section II: Background
- Section III: Staff Recommendations: Successor Program Incentive Design
- Section IV: Megawatt Targets
- Section V: Cost Cap Calculation
- Section VI: Implementing the Successor Program and Transitioning from the Transition Incentive Program
- Section VII: Community Solar Permanent Program
- Section VIII: Questions for Stakeholder Feedback

Staff will accept written comments in response to the Straw Proposal, in addition to taking feedback in the Stakeholder Workshops discussed below. NJBPU encourages stakeholders to submit one set of written comments on all relevant topics, rather than submitting several sets of comments on different topics. Written comments are due by **5:00 p.m. on Thursday, May 13**, 2021. Instructions on how to submit comments are included below.

Stakeholder Workshops

Staff will be holding **four topic-specific stakeholder virtual workshops** to discuss the Straw Proposal. Workshops will focus primarily on the recommendations described in the Straw Proposal and on the stakeholder questions located in Section VIII. NJBPU will provide detailed agendas in advance of each workshop. Workshops #1, #2, and #4 are intended to invite robust conversation and feedback on the proposed Successor Program.

Workshop #3 on Solar Equity and Inclusion will be conducted in the evening. It will include a presentation by NJBPU Staff of "New Jersey Solar 101," which will cover topics such as:

- What is the solar Successor Program?
- What are the Board's solar policy goals?
- What does this mean for communities?

This presentation will be given twice, at 5:00 p.m. and at 7:00 p.m. Each presentation will be followed by an opportunity for comments and discussion. NJBPU encourages members of the public interested in solar to join and speak with Staff about their experience with solar and their thoughts on the future programs.

Please register for each of the four stakeholder workshops separately using the registration links provided below. After registering, you will receive a confirmation email containing information about joining the webinar and checking your system requirements. We encourage all webinar attendees to check their systems in advance of the workshops to ensure a smooth connection.

The Board will also be holding its Quarterly Public Meeting on April 30, 2021 on the topic of the Solar Successor Program. This Public Meeting will complement the workshops, and enable stakeholders to speak directly with the Board Commissioners. Registration details and meeting logistics are available in the Public Notice.

Date	Meeting Details
Wednesday, April 21, 2021 **10:00 a.m. – 12:30 p.m.** **1:30 p.m. – 4:00 p.m.**	**Workshop #1: Incentive Program Design** • Morning Session: Administratively-Set Program • Afternoon Session: Competitive Solicitation Program **Registration Link:** https://zoom.us/webinar/register/WN_15CkvuoqSpmsA0LV8P8vBA
Monday, April 26, 2021 **10:00 a.m. – 12:00 p.m.** **1:00 p.m. – 4:00 p.m.**	**Workshop #2: Community Solar, Cost Cap, and Capacity Targets** • Morning Session: Community Solar and Policy Priorities • Afternoon Session: Cost Cap and Capacity Targets **Registration Link:** https://zoom.us/webinar/register/WN_2IejzWAsTUeC6ytGjplceQ
Wednesday, April 28, 2021 **5:00 p.m. – 6:30 p.m.** **7:00 p.m. – 8:30 p.m.**	**Workshop #3: Solar Equity and Inclusion; Community Solar** • Evening Session (will be repeated): a) Presentation: Solar 101 – *5:00 p.m. and 7:00 p.m.* b) Open discussion with stakeholders, community groups, and the general public. **Registration Link:** https://zoom.us/webinar/register/WN__i7gh3EfRYWDCdWXsdjhVg
Friday, April 30, 2021 **10:00 a.m. – 1:00 p.m.**	*****Board Public Meeting***** • The meeting will be chaired by NJBPU President Fiordaliso. Stakeholders are invited to provide legislative-style testimony on the meeting topic, New Jersey's solar transition. See the Public Notice for details.
Monday, May 3, 2021 **1:00 p.m. – 4:00 p.m.**	**Workshop #4: Review of Final Decisions and Program Transition** a) Review of Final Incentive Levels & Capacity Targets b) Transitioning the Program **Registration Link:** https://zoom.us/webinar/register/WN_-8YtJ0CxQMynXp9DFoNo5g

In addition to the formal meetings detailed above, Staff will be conducting an **"open door" policy** for people or organizations wishing to speak directly with Staff about solar policy, equity, and inclusion. Staff will be available to schedule meetings **between Monday, April 12, 2021 and Friday, April 30, 2021**. Please use the following link to register for a meeting during one of Staff's available times: https://calendly.com/njbpusolar/njbpu-solar-successor-program-office-hours. If the available meeting times do not work, please email solar.transitions@bpu.nj.gov and Staff will endeavor to accommodate your request.

Written Comments

Written comments are also encouraged and must be submitted electronically either:

1) To Board Secretary Aida Camacho at board.secretary@bpu.nj.gov; or
2) Through the Board's External Access Portal upon obtaining a MyNewJersey Portal ID. Once you establish a MyNewJersey account, an authorization code is required which you can request by emailing the NJBPU's IT Helpdesk at BPUITHELPDESK@bpu.nj.gov. If you have questions about the e-Filing portal, please consult NJBPU's e-Filing FAQs.

Comments must be in either Word or PDF format and should include in the subject line "Comments regarding Docket No. QO20020184, Solar Successor Program," along with the last name of the author and the name of their company or organization.

All written comments are due by **5:00 p.m. on Thursday, May 13, 2021**.

Questions

Please email solar.transitions@bpu.nj.gov with any questions.

Aida Camacho-Welch
Secretary of the Board

Date: April 7, 2021

New Jersey Solar Successor Program
Staff Straw Proposal

Released: April 7, 2021

TABLE OF CONTENTS

Section I: Introduction
Summary of Straw Proposal Recommendations

Section II: Background
a. Solar in New Jersey
b. Transition Incentive Program
c. Stakeholder Process
d. Cadmus Capstone Report
e. Solar Transition Principles

Section III: Staff Recommendations: Successor Program Incentive Design
a. Fixed Incentive for the Environmental Attributes Produced by Each Eligible Facility
b. Administratively Determined Incentive for Small Net Metered and all Community Solar Projects
c. Competitive Solicitation Model for all Grid Supply Projects and Large Net Metered Projects
d. New Programs and Technologies
e. Solar Siting

Section IV: Megawatt Targets

Section V: Cost Cap Calculation
a. Estimating the Denominator (Total paid for electricity by all customers in the State)
b. Estimating the Numerator (Cost to customers of the Class I renewable energy requirement)
c. Cost Cap Tracking Methodology
d. Available Cost Cap Headroom

Section VI: Implementing the Successor Program and Transitioning from the Transition Incentive (TI) Program
a. Transitioning to the Successor Program
b. Annual Schedule and True-up
c. Addressing the Interaction with the RPS Program
d. Future Program Elements to Consider

Section VII: Community Solar Permanent Program

Section VIII: Questions for Stakeholder Feedback

Appendix A: ITC-Amended SAM Simulations provided by Cadmus (February 2021)

Appendix B: Cost Cap Tool

I. INTRODUCTION

This Solar Successor Program Straw Proposal (Successor Straw) was developed by the New Jersey Board of Public Utilities (NJBPU or Board) Staff (Staff), building upon more than two years of rigorous stakeholder discussions. It is intended to put forth specific ideas and concepts for discussion with stakeholders and ultimately inform recommendations to the Board for the design and implementation of the Solar Successor Program (Successor Program).

The Successor Program is a direct result of New Jersey Governor Phil Murphy signing the Clean Energy Act of 2018 (Clean Energy Act) into law on May 23, 2018.[1] The Clean Energy Act directs the Board to fundamentally reshape New Jersey's solar energy incentive programs, culminating in the creation of a long-term, durable solar incentive program that puts the State on a path toward meeting its goal of 100% clean energy by 2050, while balancing ratepayer impacts with the goal of ensuring a thriving and stable solar industry.

For the last decade, solar has been a major contributor to jobs and the quality of life in New Jersey. The solar industry now employs an estimated 6,225 New Jerseyans, supporting both the local and national solar industries.[2] While the economic and environmental benefits of New Jersey's first 3.5 GW[3] of solar have been significant, the solar successor incentive program is expected to have an even larger impact. New Jersey's 2019 Energy Master Plan (EMP) includes a pathways analysis to reach 100% clean energy by 2050, which identified the need for 32 GW of total solar installed by 2050. Thus, even as New Jersey's solar future will likely involve larger solar installations with a more geographically diverse footprint, existing solar installers and companies will continue to have more opportunities than ever.

Modeling from New Jersey's Integrated Energy Plan suggests that New Jersey should seek to install 5.2 GW of solar by 2025, 12.2 GW by 2030, and 17.2 GW by 2035 to put New Jersey on a least-cost path to 100% clean energy by 2050. Recognizing the many variables considered in establishing the modeling, as well as the many variables that may change in the next 15 years and impact these targets, Staff begins with the premise that the Successor Program must be sufficiently robust to rapidly expand upon the existing 3.5 GW of installed solar and quickly scale new solar generation to approach these goals.

Further, Staff seeks to uphold certain key principles in establishing the Successor Program, including: maximizing the benefit to ratepayers; supporting the continued growth of the solar industry; and providing transparency, disclosure, and notice to stakeholders.

The Successor Program represents the next step in the history of New Jersey's fight against climate change and a new opportunity for New Jersey's economic growth and support for clean energy development in the State. It is the final stage of the multi-year Solar Transition process initiated by the Clean Energy Act,

---

[1] P.L. 2018, c. 17 (N.J.S.A. 48:3-87.8 et seq.).

[2] National Association of State Energy Officials & Energy Futures Initiative, *The 2020 U.S. Energy & Employment Report: 2020 State Reports* (last visited February 18, 2021), available at https://static1.squarespace.com/static/5a98cf80ec4eb7c5cd928c61/t/5e78198f28dc473dd3225f04/1584929183186/USEER-Energy-Employment-by-State-2020.pdf.

[3] New Jersey's Office of Clean Energy reports solar installations as "MWdc" and tracks solar installations at NJ Clean Energy Program: *Solar Activity Reports*, (last updated February 24, 2021), available at http://njcleanenergy.com/renewable-energy/project-activity-reports/project-activity-reports.

which was conducted via the closure of the Solar Renewable Energy Certificate (SREC) Registration Program, the implementation of the interim Transition Incentive (TI) Program, and the ongoing development of the new Successor Program.

Summary of Straw Proposal Recommendations

Staff proposes to implement a Solar Successor Program with a bifurcated incentive program structure to incent behind-the-meter, community solar, and grid supply solar development.

First, for behind-the-meter projects of 2 MW or less, as well as all community solar projects, Staff proposes to build upon the successful Transition Incentive Program established in December 2019, and to roll forward a number of key program design elements from the TI Program as the heart of the Successor Program. Key similarities between the TI Program and Staff's proposed Successor Program include:

- A fixed incentive payment for each megawatt hour of solar electricity produced;
- An incentive that varies based on mount type (e.g., ground mount, rooftop, canopy) and other project characteristics, a process known as project "differentiation" of incentives; and
- A fixed, guaranteed term for incentive payments in order to ensure the ability to finance projects.

Second, Staff proposes to create a new competitive solicitation for all grid supply projects and net metered non-residential projects above 2 MW, other than community solar projects.[4] The competitive solicitation should be divided into separate tranches (for example, those constructed on open space, the built environment, or behind-the-meter) to enable cost-based competition among similar solar projects while enabling the Board to steer development toward certain siting and policy objectives, as described in more detail below. Staff proposes that the new grid scale procurements include substantial project maturity requirements to minimize failure rates.

Finally, the Successor Straw includes a detailed proposal regarding the definition of the statutory cost cap[5] and proposes a dynamic approach to megawatt targets for various technologies, in keeping with the requirements to keep clean energy spending within the Clean Energy Act's statutory guardrails.

[4] As noted above, all community solar projects, irrespective of size, will continue to be eligible to receive the administratively determined solar incentive.

[5] This Successor Straw proposal supersedes the Board's initial inquiry into the cost cap in the "Staff Straw Proposal on Defining the Clean Energy Act of 2018's Statutory Cost Caps," issued on January 6, 2020, and will be incorporated into the record of this proceeding.

II. BACKGROUND

a. Solar in New Jersey

New Jersey has been a national leader in solar development despite its relatively small size, population density, and lower solar insolation values[6] relative to some of the western and southern states. The State's aggressive clean energy policies, which include a solar set-aside in the Renewable Portfolio Standard (RPS), have resulted in almost 130,000 residential solar installations, representing over 1,000 MW as of January 31, 2021), and net metered commercial and industrial customer-generators (over 7,390 installations at 1,695 MW as of January 31, 2021). Grid supply solar has increased as well, with 736 MW installed through January 31, 2021, although at a significantly slower rate than other market segments. New Jersey had the seventh largest installed solar capacity in the country,[7] including a total of 3,520 MW of installed solar capacity as of January 31, 2021 and over 523 MW in the pipeline.[8]

In addition, the Community Solar Energy Pilot Program (Pilot Program) established in 2019 was recently expanded from the 75 MW goal set in the Pilot Program rules to a target of 150 MW for the second program year. In the first year of the Pilot Program, the Board selected 45 projects representing almost 78 MW out of an application pool of almost 652 MW. Importantly, every project selected in the first round of the community solar Pilot Program has ensured that a majority of its subscribers are low- and moderate-income customers, in line with New Jersey's commitment to ensuring that all customers, regardless of income level, have access to the benefits of solar.

b. Transition Incentive Program

The Board approved New Jersey's TI Program on December 6, 2019[9] to provide a "transition" between the SREC incentive program and the Successor Program described in this Successor Straw. The closure of the SREC market was mandated by the Clean Energy Act, which required the Board to adopt rules and regulations to close the SREC program to new applicants once solar generation reached 5.1 percent of total retail sales, and no later than June 1, 2021. The Board found that solar generation reached the target level on April 30, 2020, and the SREC market was closed to new entrants as of that date.

A portal for registering new projects for eligibility in the TI Program opened on May 1, 2020. Projects that had registered for SRECs but failed to commence commercial operations by April 30 were transferred to

[6] Solar insolation is a measure of solar radiation energy received on a given surface area in a given time and can be affected by such variables as weather, time of day, the angle of the sun, altitude, and geographic location.

[7] Solar Energy Industries Association, *Top 10 Solar States* (last visited Feb. 18, 2021), available at https://seia.org/sites/default/files/2020-03/SEIA_Top10_Solar_States_2019-YIR.pdf#:~:text=Top%2010%20Solar%20States%20State%20ranking%20based%20on,4%20Florida%20453%2C837%203%2C690%20MW%205%20Nevada%20661%2C123.

[8] New Jersey Department of Environmental Protection - Bureau of GIS, *Solar Photovoltaic (PV) Installations by County in New Jersey* (last visited February 18, 2021), https://gisdata-njdep.opendata.arcgis.com/datasets/solar-photovoltaic-pv-installations-by-county-in-new-jersey?geometry=-79.923,38.664,-59.016,41.603.

[9] I/M/O a New Jersey Solar Transition Pursuant to P.L. 2018, c. 17, Docket No. QO19010068 (Dec. 6, 2019), available at https://www.bpu.state.nj.us/bpu/pdf/boardorders/2019/20191206/12-6-19-8B.pdf.

the TI program on July 1, 2020. The Board adopted rules governing the TI program, which were published in the New Jersey Register on October 5, 2020.

The key feature of the TI Program was the creation of a new solar incentive, referred to as the Transition Renewable Energy Certificate, or TREC. A qualifying project receives one TREC for each megawatt-hour (MWh) of qualified solar production for 15 years. The TRECs are purchased and retired by the load serving entities as a part of New Jersey's Renewable Portfolio Standard. While the program established a "base" TREC value of $152/MWh of eligible solar generated, the value of each TREC assigned to an individual project developer varied, based on the type of project and the "factor" assigned to that project class by the Board's implementing orders and subsequent rules. The value of each TREC is calculated by multiplying the base compensation rate of $152/MWh by the project's assigned factor, as shown in the chart below:

Table 1: TREC Project Types and Factors

Project Type	Factor	Incentive Value (per TREC)
Subsection (t): landfill, brownfield, areas of historic fill	1.0	$152.00
Grid supply (Subsection (r)): rooftop	1.0	$152.00
Net metered non-residential rooftop and carport	1.0	$152.00
Community solar	0.85	$129.20
Grid supply (Subsection (r)): ground mount	0.6	$91.20
Net metered residential ground mount	0.6	$91.20
Net metered residential rooftop and carport	0.6	$91.20
Net metered non-residential ground mount	0.6	$91.20

The TI Program is designed to remain in effect until the Board determines that the Solar Successor Incentive Program, as described in this Straw, is sufficiently developed to close the TI Program to new applicants.

c. Stakeholder Process

The Successor Straw is a culmination of two years of extensive stakeholder engagement. With the support of Cadmus Group, LLC ("Cadmus" or the "Consultant"), Staff has placed special emphasis on conducting thorough and multi-faceted outreach to stakeholders.[10] Since December 2019, this has included a Consultant-led workshop to discuss various options for solar incentive program structures, a Staff-led stakeholder meeting on specific topics relating to the Solar Transition, a cost survey to inform modeling assumptions, focus groups with representative stakeholders, and robust discussions on the New Jersey

[10] A full summary of the stakeholder engagement is provided by the New Jersey Clean Energy Program, *Clean Energy Act Solar Transition Stakeholder Process* (last updated Jan. 7, 2021), available at https://njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-proceedings.

Solar Transition Capstone Report (Capstone Report). Staff intends to continue this open dialogue through this Successor Straw.

d. Cadmus Capstone Report

One of the key mandates of the Clean Energy Act is the completion of a study that evaluates how to modify or replace the SREC program to encourage the continued efficient and orderly development of solar throughout the State.

The Board contracted Cadmus to provide analytical and modeling support throughout the Solar Transition process. The results of their analysis are summarized in two reports.

1. The *Transition Incentive Supporting Analysis & Recommendations* (last revision on August 14, 2019) and supplemental Addendums dated September 25, 2019 and November 13, 2019 summarized the iterative process of developing recommendations for the structure and value of the Transition Incentive Program.

2. The *Capstone Report* is a comprehensive analysis of policy design options for the Successor Program. A draft Capstone Report was published for stakeholder feedback on August 11, 2020. The final Capstone Report was presented to the Board and subsequently submitted to the Legislature on January 7, 2021.

e. Solar Transition Principles

In developing initial recommendations on the creation and design of the Successor Program in this Successor Straw, Staff has drawn upon the same general principles announced at the outset of the Solar Transition process.[11] Of particular relevance to this Successor Straw are the following principles:

1. Provide maximum benefit to ratepayers at the lowest cost;

2. Support the continued growth of the solar industry;

3. Meet the Governor's commitment to 50% Class I Renewable Energy Certificates (RECs) by 2030 and 100% clean energy by 2050;

4. Provide insight and information to stakeholders through a transparent process for developing the Solar Transition and Successor Program; and

5. Comply fully with the statute, including the implications of the cost cap.

[11] Board of Public Utilities, *New Jersey Solar Transition Staff Straw Proposal* (Dec. 26, 2018), available at https://njcleanenergy.com/files/file/Renewable_Programs/Solar%20Transition%20Straw%20Proposal%20-%202018-12-26%20clean%20(final).pdf.

A brief description of these criteria as they relate to Staff's preparation of this Successor Straw are detailed below:

1. Provide maximum benefit to ratepayers at the lowest cost:

Solar energy provides far-reaching societal benefits, such as electricity generation free of carbon emissions and criteria air pollutants, resilience in the form of distributed generation, and the economic growth fueled by local job creation. The incentives available in the Successor Program are funded by New Jersey electricity ratepayers. As such, prudence requires that these funds be used as efficiently as is practicable. The proposed Successor Incentive should therefore aim to ensure that the cost of the incentive is as minimal as necessary to encourage competition and support the industry. In addition, a long-term, durable incentive structure that reduces regulatory uncertainty will lower financing costs and therefore help to protect the ratepayers' interests.

2. Support the continued growth of the solar industry:

New Jersey has long supported the development of a robust and sustainable market for renewable energy in New Jersey through its increasing RPS and legacy SREC Program. The Successor Program aims to ensure that New Jersey's solar industry continues to thrive, while meeting all cost cap requirements and adapting to changing market conditions. Notably, the Successor Program is intended to maintain the market for behind-the-meter residential, commercial, and industrial installations and community solar projects, while significantly accelerating grid supply solar generation.

3. Meet the Governor's goal of 50% Class I Renewable Energy Certificates (RECs) by 2030 and 100% clean energy by 2050:

Solar electric generation is one of the key pillars of meeting Governor Murphy's goal of 100% clean energy by 2050. Further, it is critical to meeting the State's efforts to reduce emissions of greenhouse gases and other air pollutants associated with electric power generation, as detailed in the 2019 EMP and 2020 Global Warming Response Act Plan.[12] The Successor Program will be designed to better utilize ratepayer funds to incent new solar generation that serves load in New Jersey in pursuit of the 50% RPS by 2030, rather than supporting existing out-of-state generation, and enable New Jersey to steadily advance its clean energy resources in pursuit of 100% clean energy by 2050.

4. Provide insight and information to stakeholders through a transparent process for developing the Solar Successor Program:

This Successor Straw represents the next step in a long series of stakeholder engagements on the development of New Jersey's long-term solar incentive program. By putting this document out for comment and continuing its broad outreach strategy to interested stakeholders, the Board fulfills the best traditions of the notice and comment process. This Successor Straw will be the subject of conversation

[12] New Jersey Board of Public Utilities, *2019 New Jersey Energy Master Plan: Pathway to 2050*. Available at https://nj.gov/emp/docs/pdf/2020_NJBPU_EMP.pdf.
New Jersey Department of Environmental Protection, *New Jersey's Global Warming Response Act 80 x 50 Report*. Available at https://www.nj.gov/dep/climatechange/docs/nj-gwra-80x50-report-2020.pdf.

over four stakeholder work sessions and a written comment period before Staff presents recommendations for the Board to consider in adopting and implementing the new Successor Program.

5. Comply fully with the statute, including the implications of the cost cap:

As discussed above, it is important that ratepayer funds be used prudently and efficiently. The Clean Energy Act codifies this priority by setting a cost cap on the expenditures that may be made to incentivize renewable energy: no more than 9% of total electricity payments in the State for energy years 2019 through 2021, and no more than 7% of the total paid in subsequent energy years.[13] In compliance with this mandate, the Capstone Report includes detailed breakdowns of the expected cost of various programs, and this Successor Straw proposes additional detail on how the Staff proposes to address the statutory cost cap considerations and how those calculations will affect the size of the Successor Program.

III. STAFF RECOMMENDATIONS: SUCCESSOR PROGRAM INCENTIVE DESIGN

a. Fixed Incentive for the Environmental Attributes Produced by Each Eligible Facility

This Successor Straw proposes that all incentives provided under the new Successor Program be structured as a fixed incentive payment for each megawatt-hour (MWh) produced by an eligible solar system (similar to the model piloted during the TI Program). Under the fixed production incentive model, each eligible project receives a fixed incentive payment for each MWh of electricity produced during the full term of the project's qualification life.[14] This per MWh solar incentive represents the renewable attributes of each qualifying resource. Consumers and financers all have a clear understanding of the expected value of the incentives associated with each MWh of generation by a given project. This type of per MWh program design also ensures that projects receive incentives for actually producing clean energy; this reduces the risk that ratepayers would support the development of solar infrastructure that produces less energy than anticipated (as might occur in the case of a per MW incentive structure). It also ensures that ratepayer incentives have a "multiplier" effect by leveraging multiple private dollars of capital for every dollar of ratepayer investment.

Staff recommends that the value of the incentive be determined based on project type. Specifically, the Successor Straw recommends that the Board consider implementing a two-type incentive program, as follows:

- Administratively set incentives for residential projects, net metered projects of 2 MW or less,[15] and all community solar projects; and

[13] *See,* P.L. 2018, c.17 Section 38(d)(2).
[14] "Qualification life" refers to the number of years for which a solar project is eligible to receive incentive payments.
[15] The Board's rules for interconnecting customer-sited renewable generation contain three levels of potential project review depending upon proposed generator size. Level 2 interconnection review is limited to proposed facilities with a maximum AC system design capacity totaling 2 MW or less.

- Competitively-set incentives for grid supply projects and net metered non-residential projects above 2 MW.

The two proposed incentive-setting mechanisms are described in further detail below.

b. Administratively Determined Incentive for Small Net Metered and all Community Solar Projects

Staff recommends building on the successful TI Program and rolling forward a number of key program design elements into the Successor Program for certain types of smaller projects, including all net metered residential projects, small net metered non-residential projects (those sized 2 MW or less), and all community solar projects.

Staff sees several benefits to using this model:

- *First,* using the TI structure has the benefit of allowing a relatively quick program implementation, making it a prime candidate to help reignite New Jersey's economy post-COVID, particularly as many of the underlying program design characteristics have already been worked out and stakeholders are familiar with the program. While the specific incentive values were the subject of significant discussion under the TI Program, the program was easy to understand, implementable on a short time frame, and sufficiently robust to allow for expansion and modification to meet New Jersey's long-term solar needs;

- *Second*, an incentive structure that is both fixed and known in advance provides a low-risk incentive structure for developers, thereby encouraging investment of at-risk private capital;

- *Third,* an administratively determined incentive provides flexibility to the Board to adjust the incentive levels on a pre-determined schedule (initially proposed in this Straw Proposal for every three years) that will allow the Board to adjust the long-term programmatic elements as needed to meet policy goals and cost considerations, as well as allowing limited reopeners during the three-year period to be responsive to changing market conditions (such as federal incentives and tariffs); and

- *Fourth*, by adopting a large portion of the TI framework, it creates a manageable transition for the industry from the TI to the Successor Incentive program.

The administratively determined incentive would be structured as follows:

a. Incentive Type: Differentiated, administratively set fixed incentive.

b. Qualification Life (i.e., incentive term): 15 years. Projects will receive the same fixed incentive on a $/MWh basis for 15 years, starting from the date the project receives permission to operate (PTO) from the relevant Electric Distribution Company (EDC). At the end of the Qualification Life, projects will be eligible to receive Class I RECs or any equivalent renewable energy incentive that may be available at that time.

c. Eligibility: Net metered residential; net metered non-residential at or under 2MW; community solar.

d. Differentiation: This Successor Straw proposes that the Board implement different incentive levels in the Successor Program, patterned off of the differentiation used in the TI Program. Like TRECs, the new incentive program is proposed to be designed to provide solar producers differing financial incentives tied to the estimated cost and revenue expectations for different types of solar facilities. Thus, the Successor Program will provide a higher incentive value to projects with the largest gap between project cost and revenue. Projects in market segments where there is a smaller gap between costs and revenues would be assigned a lower incentive. The overall goal of differentiation would be to ensure that ratepayers are providing the minimum necessary financial incentive to develop diverse types of projects that is consistent with maintaining a healthy solar industry in New Jersey. Staff recommends that the market segments be divided as follows:

   i. Net Metered Residential (all types and sizes);

   ii. Net Metered Non-Residential (rooftop, carport, and canopy, 2 MW or less);

   iii. Net Metered Non-Residential (ground mount, 2 MW or less);

   iv. Community Solar; and

   v. Community Solar that serves predominantly (i.e., at least 51%) low- and moderate-income (LMI) customers.[16]

e. Initial Incentive Value Setting Mechanism: Incentives will be set administratively for each of the market segments identified above. Incentive values for each of the market segments will be set via an open and transparent process, using the modeling conducted by Cadmus in the Capstone Report as a starting point to guide decision-making,[17] and will not exceed the incentive values established for the TI Program. Staff begins by using the following modeling assumptions, which are based off a combination of assumptions carried over from the TI Program modeling, as well as Staff recommendations for establishing a sustainable incentive program that can both grow the solar industry in New Jersey and adhere to the cost cap:

   i. Setting all incentive levels targeting the 50th percentile of estimated project costs, using the SREC Registration Program (SRP) and TI data provided to the New Jersey Clean Energy Program;

[16] In the context of community solar, "low-income" means a household with adjusted gross income at or below 200% of the Federal Poverty Level. "Moderate-income" means a household with a total gross annual household income in excess of 50%, but less than 80% of the median income, as determined by annual HUD income limits.

[17] Staff notes that the Capstone Report accepted by the Board on January 7, 2021 included modeling conducted prior to the December 2020 extension to the federal ITC. Cadmus has since performed a sensitivity analysis of the modeling using the adjusted ITC values. This sensitivity analysis will be published at the same time as this Successor Straw.

ii. Setting net metered incentive levels based on the lower of the third party-owned or host-owned modeled incentive values;

iii. Setting incentive rates using Public Service Electric and Gas Company (PSE&G) retail rates revenue assumptions. This assumption has an impact on modeled incentive levels: PSE&G's high residential retail rates result in a lower incentive level recommendation (e.g., compared to using Jersey Central Power & Light Company retail rates), while PSE&G's low commercial and industrial rates results in a higher incentive recommendation;[18]

iv. Market segments not contemplated here, such as behind-the-meter solar + storage, would be the subject of additional proceedings.

Table 2: Initial Proposed Incentive Values for First Three-Year Period

Market Segment	Proposed Incentive Value
Net Metered Residential (all types and sizes)	$85.00
Net Metered Non-Residential 2MW or less (rooftop, carport, canopy)	$85.00
Net Metered Non-Residential 2MW or less (ground mount)	$85.00
Community Solar non-LMI	$70.00
Community Solar LMI	$90.00

f. Incentive Value Re-Setting Mechanism: The incentive value would be reset via a public proceeding every three years, to be conducted at least nine months prior to the start of the next three-year incentive period, in order to provide the market a clear line of sight. The value of the incentive would be set administratively, based on updating the existing modeling, addressing any major

[18] Because New Jersey rate design varies significantly between utilities, a single statewide rate may result in over- or under-payments in some service territories, or clustering of solar development in areas where the rate is attractive and little development in other areas. While this initial program design proposes not to differentiate market segments by utility territory for ease of administration, Staff proposes that the Board consider further refining incentive levels in later years.

policy changes or drivers that may have changed (e.g., tax policy), reviewing market performance, and including stakeholder input.

i. Staff recommends that the Board allow limited opportunities to adjust incentive levels within any given market segment prior to the start of a new three-year period. However, to maximize market certainty, Staff proposes to limit these adjustment opportunities only to circumstances in which there are significant market-wide changes, such as material tax law or tariff changes.

ii. Resets would not affect projects already registered but would affect the price that new projects receive until the next incentive value reset.

iii. If the Board does not initiate a triennial review and proceeding to affirmatively maintain or reset the incentives, incentives would automatically decline by 10% for each three-year incentive period until such time as the Board takes action.

g. Market Segment Targets (also referred to as "capacity targets"): Staff recommends that the Board set market segment targets based on the total amount of budget dollars that are assigned in each Energy Year. Staff proposes to set market segment targets in three-month increments or "windows" for all segments except community solar. Using windows will partially address the issue that a given market segment may fill up immediately upon opening, depriving projects of any opportunity to receive an incentive until the window re-opens, as has happened in other states. Projects will be allowed to register on a first come, first-served basis so long as they meet the eligibility and qualification requirements. Given proposed megawatt targets and historical build rates, Staff does not anticipate rapidly exceeding the megawatt targets set for each window. However, Staff will discuss with stakeholders how to facilitate a situation in which demand exceeds supply. Staff does not recommend having a waiting list for projects seeking to enter a window for a market segment that is already fully subscribed. Community solar capacity will be allocated pursuant to the rules of the current Pilot Program or the subsequent permanent community solar program.

h. Project Qualification and Maturity Requirements: The administrative incentives are available only to new systems. Additionally, Staff proposes that project developers be required to meet minimum project maturity standards to discourage non-viable projects entering the queue or remaining in the queue indefinitely, and to discourage projects that are less likely to reach commercial operation. Staff is also seeking feedback on whether the Successor Program should mandate that behind-the-meter solar systems need to be eligible to take net metering service from one of New Jersey's EDCs, meaning that behind-the-meter projects in non-EDC territories in New Jersey would not qualify for the Successor Program.

All projects, with the exception of community solar projects, are assigned a completion deadline of 12 months from the date of issuance of a conditional registration acceptance letter, with the possibility of one, six-month extension, at the discretion of Staff. Community solar projects are assigned a completion deadline of 18 months from the date they are conditionally approved by the Board, with the possibility of one six-month extension, at the discretion of Staff. These

completion deadlines will be strictly enforced. Any further extension requests will be discouraged, but may be submitted via petition to the Board. A developer that cancels its project registration will forfeit its place in the window and will need to reapply in the next available window.

Additionally, all projects must comply with the land-use and siting restrictions, as set forth below in the "Siting" section.

In terms of project maturity requirements, Staff proposes to enforce strict development milestones, including deposits that ratchet up for projects that are delayed and will be forfeited if a project fails to reach commercial operation. As the industry has seen in other states, non-viable "ghost" projects clogging the queue can be a major impediment to a well-functioning incentive program. To address these concerns, Staff proposes that projects registering in the administrative incentive program be required to meet the following minimum maturity requirements:

1. A contract between the primary installer and the customer of record;

2. A fee paid to the program administrator to be developed by Staff during the stakeholder process, and varying based on project size (under 25 kW, between 25 kW and 500 kW, and over 2 MW), sized to cover the costs of administering the program, as established by a future Board order;

3. For all residential systems, a signed disclosure statement (to be developed by Staff based on the disclosure statement used in the TI Program);

4. For all projects larger than 25 kW in size, an executed interconnection agreement with the appropriate EDC (see milestone #3 below); and

5. For all projects larger than 25 kW in size, a copy of all necessary permits or permit applications.

A deposit, equal to 10% of the project cost and not to exceed a value determined with stakeholders, must accompany any request for extension beyond the initial 12-month completion date. The deposit will be refunded if the project reaches commercial operation.

Further, the Board will maintain milestone reporting and project completion requirements as it has in the SRP. The quarterly submission of reports documenting a project's progress toward completion will be utilized in Staff deliberation over the propriety of granting an extension request. Such milestones may include, for example:

1. Submitted interconnection application to EDC (Part 1 submitted or PJM equivalent);

2. All required federal, state and local permits obtained;

3. Received interconnection application approval from EDC (Part 1 fully executed or PJM equivalent);

4. Mounting system installation has commenced;

5. Mounting system fully installed;

6. Greater than 50% of solar panels installed;

7. All equipment installed, system testing complete and request sent to EDC to test and authorize operation of system; and

8. Commenced Commercial Operations as evidenced by EDC Authorization to Operate Approval (Interconnection Application Part 2 fully executed or PJM equivalent).

i. Administration: The incentive will be administered in the same way as the TI Program, with each MWh produced during the project's Qualification Life leading to the creation of a Successor Program REC. Projects will be required to create an account with the Generation Attribute Tracking System (GATS) administered by PJM-EIS, an unregulated affiliate of PJM Interconnection, LLC (PJM), to register generation data. RECs will be purchased by an agent of the EDCs and, like SRECs and TRECs, will subsequently be subtracted from the Class I REC compliance obligation of Third Party Electric Suppliers and Basic Generation Service Providers based on market share of statewide retail electric sales.

c. Competitive Solicitation Model for all Grid Supply Projects and Large Net Metered Projects

Staff proposes to create a competitive solicitation model for grid supply projects, as well as for net metered non-residential projects above 2 MW. The solicitation will be conducted annually by an independent solicitation administrator. Notably, Staff proposes to establish multiple tranches in each solicitation, each with its own clearing price: one for basic grid supply projects; one for grid supply projects located on targeted desirable land uses (for example, the built environment including rooftops, landfills, and brownfields); one for solar + storage projects; and one for the net metered non-residential projects above 2 MW (which already receive a significant ratepayer incentive through the net metering program and therefore likely need lower additional incentives to be commercially viable). The competitive solicitation model has the potential to significantly expand market segments, such as grid supply on warehouse rooftops and other types of grid supply projects, that have thus far been limited by administrative or regulatory barriers.

For the four proposed competitive solicitation tranches, Staff proposes that the Board set a budget-based cap, and developers or owners would bid in an incentive value for the project within the market segment tranche in which they qualify. Offers would be ranked from least to most expensive and be selected until the budget-based cap is reached. Staff proposes that projects would receive a fixed-term, per MWh incentive value in the amount that they bid, such that the aggregated value of the total selected offers would be below the budget cap. However, Staff requests feedback on whether projects should be paid-as-bid or receive a single clearing price. Selected projects would receive a contract for REC off-take in a term of 15 years from an agent of the four EDCs, with the costs to be allocated on a pro rata share. Staff

proposes that the four EDCs work with the developer community as part of a stakeholder working group to establish a standard contract that will apply to all awardees.

Staff sees several benefits to using this model:

- *First*, a competitive solicitation process will ensure that New Jersey ratepayers are incentivizing the projects seeking the lowest incentive contribution from ratepayers;

- *Second*, the incentive values will be flexible and reflective of the most recent market conditions;

- *Third*, the fixed, long-term, and guaranteed nature of the incentive provides a relatively low-risk incentive structure for developers, thereby encouraging investment of private capital; and

- *Fourth*, by providing a fixed incentive, but requiring projects to remain merchant in the energy market, the Board would still provide developers a clear incentive to maximize the value of the energy they produce, including by designing systems to discharge electricity at times of the day when prices are high.

Staff proposes to structure the competitive solicitation for the defined solicitation categories as follows:

a. Incentive Type: Competitive solicitation-based fixed incentive for clean energy attributes, paid for each megawatt-hour of production over the Qualification Life of the projects.

b. Qualification Life (i.e., incentive term): 15 years. Projects will receive the same fixed incentive on a $/MWh basis for 15 years, starting from the date the project receives PTO from the relevant EDC. At the end of the Qualification Life, projects will be eligible to receive Class I RECs or any equivalent renewable energy incentive that may be available at that time.

c. Eligibility: All eligible grid supply projects and net metered non-residential projects above 2 MW.

d. Solicitation categories:

    i. Basic grid supply;
    ii. Grid supply on desirable land uses (rooftops, the built environment, landfills, contaminated sites[19]);
    iii. Grid supply projects paired with storage; and
    iv. Net metered non-residential above 2 MW.

    Developers would have to choose one tranche to offer into, provided that Staff will attempt to accommodate projects that seek to offer a storage option attached to an otherwise qualifying

[19] As discussed in the Siting section below, Staff is proposing to move away from using the term "brownfield" to determine whether a project qualifies for the desirable land qualification. Instead, Staff proposes to use the term "contaminated land" to be inclusive of both brownfields and marginal lands that may be contaminated or polluted, but which are not technically brownfields, to qualify as a desirable location for solar facilities. Staff intends to continue consulting with DEP to assess qualification of land as contaminated, comparable to today's process for certifying projects located on brownfields.

solar project, by, for example, clearing the energy storage tranche first, and then allowing unsuccessful developers to participate in the grid supply tranche, or by allowing developers to separately reflect the cost of storage as part of their bids. Staff also seeks comment on how to encourage projects paired with energy storage systems to be developed on New Jersey's desired land uses (e.g., rooftops, the built environment, landfills, and contaminated sites), without unnecessarily increasing the complexity of the competitive solicitation.

Additionally, Staff seeks comments on the potential ability to allow distributed storage developers to place offers that aggregate a pool of distributed resources into a single "virtual power plant" bid that can participate in the grid supply paired with energy storage tranche. Staff specifically seeks comment on whether this is technically feasible for implementation in the first round of auctions or whether it should be deferred for possible consideration in future development cycles.

e. Procurement Rules:

i. A separate competitive solicitation will be run for each of the four categories identified above;

ii. Solicitations will be held annually, starting in energy year 2022;

iii. A solicitation manager to be hired by the Board would set, in consultation with Staff, a confidential maximum "not to exceed" value for offers (maximum bid price in $/MWh and quantity);

iv. The Board would set a budget target (in dollars) for each of the competitive solicitation market segments in advance of each solicitation to provide the industry maximum certainty that an incentive would be available for any particular project, including true-up against prior years' cost cap. Setting budget-based procurement targets (rather than MW or MWh targets) allows for the procurement for more capacity as offer prices decrease (and therefore for more procurement as compared to a fixed MW or MWh target).

v. Offers will be submitted for each individual project, as sealed-offers, as a $/MWh incentive value, along with project capacity and an estimate of annual MWhs generated by the project.

a. For projects seeking to participate in the energy storage tranche, developers would also submit the total MWh and MWac of storage proposed to be co-located with the grid supply solar project in MWdc, along with round-trip efficiency.

b. For projects seeking to locate on New Jersey's desired land uses, the project must submit documents, as specified by the program administrator, that demonstrate that the project meets the specified criteria.

c. For projects participating in the net metering above 2 MW, the developer shall also identify the host facility, provide evidence that the solar system is sized at no

more than host facility's load, or for new facilities, expected load, and include the host customer's actual or expected rate class.

vi. Offers will be ranked from least to most expensive on a per $/MWh basis and be selected until the budget-based cap is reached (as determined by multiplying the per MWh offer price by the anticipated MWh production). Solar projects paired with energy storage will receive a contract specifying the incentive payment on a $/MWh basis for the metered solar electricity generated during the qualification life and a separate incentive for the storage component, which will be a $/MWh payment based on the nameplate capacity of the storage system.

vii. Incentives will either be set at the offer $/MWh value for each project ("pay-as-bid" model) or based on a single clearing price.

f. Project Qualification and Maturity Requirements: The competitive solicitation would be open only to new, front-of-the-meter systems, plus net metered non-residential projects above 2 MW. Staff proposes that project developers seeking to submit offers into the competitive solicitation program be required to meet minimum project maturity standards to discourage non-viable projects entering the competition, plus substantial financial assurances, proof of site control, and interconnection milestone requirements. These measures are necessary to discourage projects that are less likely to reach commercial operation from undermining the competitive solicitation process.

All projects would be assigned a completion deadline of 24 months from the date they are awarded a contract under the competitive solicitation program, with the possibility of one 12-month extension that is accompanied by additional financial security guarantees. Additionally, all projects would be required to comply with the land-use and siting restrictions, as set forth below in the "Siting" section.

Specifically, Staff proposes that projects registered in the competitive solicitation program must meet the following requirements:

i. Only new solar resources (i.e., those that are not currently registered to participate in another state incentive program, and have not reached their commercial operation date (COD)) are eligible to participate in the competitive solicitation process.

ii. Projects seeking to submit offers into the competitive solicitation must meet the following criteria:

1. A completed system impact study from PJM or a completed interconnection study from an EDC for distribution-level interconnections;

2. Demonstrated site control, patterned off of PJM's site control rules set forth in Manual 14G,[20] including the following:

    a. *Conveyance of the property* to the project developer (i.e., deed or lease) or guarantees the project developer has the right to future conveyance at project developer's sole discretion (i.e., option to lease or option to buy).
        i. Note that a Memorandum of Understanding (MOU) or a Letter of Intent (LOI) is not sufficient since MOUs/LOIs do not contain firm and sole site control commitment or exclusivity;
    b. *Term*, the minimum duration required to evidence site control is based upon the anticipated duration of the study process for the relevant project, i.e., three years for projects seeking to enter the competitive solicitation window; and
    c. *Exclusivity* is evidenced by written acknowledgement from the property owner of the identified site that, for the term (which shall be, at a minimum, equal to the duration requirement) of the lease or option agreement, the property owner cannot make the identified site property available for purchase or lease to anyone other than the project developer; and
    d. *Size*, evidence that the size of the site is suitable for the size of the generation, which may be demonstrated through a site plan, engineering study, or affidavit signed by a qualified person, to the satisfaction of the program administrator.

3. Posting of a deposit equal to $40/kilowatt (kW) of DC nameplate capacity of the facility in an escrow account for a project seeking to offer into the competitive solicitation. Projects proposed with energy storage will be required to place an additional deposit of $40/kW of energy storage offered. The escrow amount will be reimbursed to the applicant in full upon either (i) the project not being awarded a contract through the competitive solicitation, or (ii) upon attainment of PTO of the solar electric power generation facility. The escrow will be forfeited to the State on a pro rata basis for any capacity of solar or storage, as applicable, that remains unbuilt after two years, plus any applicable extensions.

4. Projects seeking a twelve-month extension to their completion deadline will be required to post an additional deposit equal to $40/kW of DC nameplate capacity of the facility in an escrow account. Projects proposed with energy storage will be required to place an additional deposit of $40/kW of energy storage offered. The escrow amount will be reimbursed to the applicant in full upon either (i) the project not being awarded a contract through the competitive solicitation, or (ii) upon attainment of PTO of the solar electric power generation facility. The escrow will be forfeited to the State on a pro rata basis for any capacity of solar or storage, as applicable, that remains unbuilt after the extension deadline.

[20] *See*, PJM Interconnection, *PJM Manual 14G: Generation Interconnection Requests* (last updated September 1, 2020), available at https://www.pjm.com/-/media/documents/manuals/m14g.ashx.

Further, the Board will mandate the quarterly submission of milestone reporting forms which had previously been voluntary in the SRP. Progress toward meeting project development milestones will be used by Staff in making a recommendation to the Board on the propriety of granting an extension request. Indicators of progress in project development may include such milestones as:

1. Submitted interconnection application to EDC (Part 1 submitted or PJM equivalent);
2. All required federal, state and local permits obtained;
3. Received interconnection application approval from EDC (Part 1 fully executed or PJM equivalent);
4. Mounting system installation has commenced;
5. Mounting system fully installed;
6. Greater than 50% of solar panels installed;
7. All equipment installed, system testing complete and request sent to EDC to test and authorize operation of system; and
8. Commenced Commercial Operations as evidenced by EDC Authorization to Operate Approval (Interconnection Application Part 2 fully executed or PJM equivalent).

d. New Programs and Technologies

Staff recommends that the Successor Program may serve as a base for additional programs, which could be incorporated into the Successor Program immediately or at a later date.

1. Solar + Storage Hybrid Systems

Staff is proposing an energy storage program that would be developed and implemented in two phases. The grid supply solar + storage program is proposed as the first phase of the Board's energy storage incentive program to help meet New Jersey's energy storage goals by locating energy storage with grid supply solar PV as a hybrid system. Solar + storage hybrid systems are currently a relatively mature energy storage use case, and they are relatively economical, especially considering that storage coupled with solar can take advantage of the solar investment tax credit if at least 75% of the storage is charged by the on-site solar. In addition, a solar + storage program can provide short-term resilience and can be designed to be favorable to overburdened communities.

As described in Section III.c, the solar competitive solicitation would include a separate tranche for grid supply solar + storage hybrid projects. Incentives could be provided as an annual payment over a period of time as a means of adding to the revenue of the project and making it more attractive for long-term financing.

Staff notes that Phase Two of the energy storage program, which is separate from the Solar Successor Program, will further investigate, with stakeholder involvement, where storage can provide the most benefit to the transmission and distribution system at the least cost to ratepayers. Specifically, Phase Two will consider: Non-wires Alternatives/Storage as a Transmission Asset; a "clean peak" program that uses

energy storage resources to shave system peaks; increased integration of renewable energy (including distributed energy such as net metered solar); long-duration storage; and other comparable programs. Staff envisions developing a straw proposal for issue in mid-2021 and holding stakeholder meetings and technical conferences towards the end of 2021 that would inform the development of this phase of the energy storage program, with the intent of initiating Phase Two of the program after stakeholder meetings are completed.

2. Dual-Use Agriculture ("agrivoltaics"):

New Jersey has a rich agricultural heritage that must be considered with the State's move toward a carbon-free energy sector. While all projects must meet the siting criteria described in the "Siting" section below, this Successor Straw also proposes to pilot a program for grid supply solar projects that are compatible with agricultural uses.[21]

Staff currently proposes to define a dual-use solar energy generation facility as a facility: (i) that allows the use of the land below the panels to simultaneously be used for agricultural or horticultural use; and (ii) for which productive agricultural or horticultural use continues, as a condition for receiving incentives as a dual-use project. Staff anticipates that a cross-agency team will further define the pilot program and develop technical rules for dual-use farmland standards.

Staff proposes that the dual-use program be available on a limited scale, in order to enable the relevant agencies to test the efficacy of such a program and the continued cultivation of the farmland in a manner consistent with its historic usage. This program would also promote the return of any land associated with a solar generation facility that ceases to be a dual-use solar energy generation facility to agricultural or horticultural use upon exiting the dual-use program. Staff suggests the Board collaborate with the Department of Environmental Protection (DEP), the Department of Agriculture (NJDA), and the State Agriculture Development Committee (SADC) to establish a pilot program and set the parameters for qualification prior to accepting dual-use projects into the competitive solicitation. Once the pilot program rules are established, dual-use solar projects could be accepted into the following annual competitive solicitation as a separate tranche.

e. Solar Siting

As evidenced by the proposed design of this Successor Program, Staff seeks to uphold the State's policies of expanding New Jersey's commitment to affordable renewable energy while also preserving and protecting open space and farmland. Staff suggests that this is best accomplished by encouraging the development of solar facilities on the built environment and marginal lands and away from open space, flood zones, forested lands, high value agricultural lands and other areas especially vulnerable to climate change. These siting criteria would apply to all projects eligible to participate in the competitive solicitation (grid supply projects and net metered non-residential projects greater than 2 MW), as well as to community solar projects.

[21] Staff notes that proposed legislation (S-3484) regarding dual-use solar is under consideration and may impact final program design and eligibility.

Staff, in consultation with DEP, NJDA, and SADC, will adopt rules and regulations establishing siting criteria and preferences for all solar facility projects in the categories identified above that are sited in New Jersey. The goals of these rules and regulations will be to reasonably minimize potential adverse environmental impacts and limit development on prime agricultural soils and soils of statewide importance located in Agricultural Development Areas.

Siting for affected solar facility projects will not be permitted on preserved farmland. Further, siting for those solar facility projects will not be permitted for parcels of land within the following categories unless otherwise authorized as described below:

- land preserved under the Green Acres Program;
- land located within the preservation area of the Pinelands area;
- land designated as forest area in the Pinelands comprehensive management plan;
- lands located within the Highlands preservation area;
- land designated as freshwater wetlands, coastal wetlands, or forested lands; and
- prime agricultural soils and soils of statewide importance (as identified by the USDA-Natural Resources Conservation Service) that are located in Agricultural Development Areas.

A developer will only be allowed to site a solar facility on a specific parcel of land that is an area that is otherwise not permitted as described above if it files a petition with the Board, which shall consider the matter in consultation with the NJDA, SADC, or DEP, as appropriate, setting out the unique factors that make solar development consistent with the character of the specific parcel, including such factors as whether the property is considered a contaminated site or landfill facility or otherwise marginal land, utilizes the already built environment or existing areas of impervious coverage, or other appropriate site-specific criteria. Staff also notes that the Board intends to allow no more than 5% of the grid supply solar facilities planned on unpreserved farmland to be located within any county's designated Agricultural Development Area and consisting of prime agricultural soils and soils of statewide importance.

Further, the Straw proposes to use "contaminated" site as a replacement for the term "brownfield," which has previously been used to determine whether a project qualifies for preferred treatment (i.e., as part of the subsection (t) designation). The term "contaminated" land is inclusive of brownfield facilities, but is designed to allow marginal lands that may be contaminated or polluted, but which are not technically brownfields, to qualify for the preferred siting portion of the competitive solicitation. Staff intends to continue consulting with DEP to assess qualification of land as contaminated, comparable to today's process for certifying projects located on brownfields, but seeks comment on exactly how the term should be defined.

As a condition of participating in the competitive solicitation, a solar facility project shall utilize native plant species and seed mixes in accordance with standards established by DEP in order to provide native perennial vegetation and foraging habitat beneficial to gamebirds, songbirds, and pollinators, and to reduce stormwater runoff and erosion at the site. DEP, in consultation with the Board, shall establish standards for the use of pollinator-friendly native plant species and seed mixes in grid supply solar facility projects.

IV. MEGAWATT TARGETS

As noted earlier, the rigorous modeling performed for the EMP indicates that New Jersey would benefit from significantly more solar than even New Jersey's highly successful historical program has provided in order to reach 100% clean energy by 2050. Specifically, the EMP suggests that New Jersey needs to have 5.2 GW of solar installed by 2025, 12.2 GW by 2030, and 17.2 GW by 2035. To contextualize these numbers, this represents an installation of roughly 950 MW annually from 2020-2035, building upon the existing 3.5 GW of installed solar; for reference, New Jersey has installed an average of 320 MW over the last five years.

This Straw Proposal seeks to put forward a dynamic approach to setting megawatt targets that both respects the cost cap discussed below while meeting the EMP goals. The least-cost way of meeting the EMP targets is generally to allow larger projects with a broad geographic scope, which are typically less costly than smaller, distributed projects (particularly after taking into account subsidies like net metering). However, the smaller projects typically have more economic development benefits and bring the benefits of solar into the communities where New Jersey residents live.

Staff proposes to use the following methodology to set MW targets to serve as guideposts, noting that actual MW procurement will ultimately be capped based on budgeted dollar allocations.

1. Start at recent averaged historical levels for the administratively determined program and a target of 300 MW annually for the competitive solicitation, increasing to a combined 900 MW per year if permissible under the cost cap by 2030.

2. Assume 150 MW annually for Community Solar projects.

Table 3: Initial Budget and Capacity Targets[22]

Project type	Year 1 Capacity Target (MW)	Budget Cap ($)[23,24]
Residential Net Metered	150 MW	$14,713,500
Commercial & Industrial Net Metered ≤ 2 MW, Rooftop, Carport, Canopy	110 MW	$10,789,900
Commercial & Industrial Net Metered ≤ 2 MW, Ground Mount	40 MW	$3,923,600

[22] The storage capacity target will be set separately and the associated grid supply solar generation will be netted out of the basic grid supply or built environment tranche, as appropriate.
[23] Budget cap assumes 1154 MWh per MW.
[24] Incentives are presumed at the following levels: $85/MWh for residential net metered and commercial net metered at or under 2 MW; $90/MWh for community solar; $40 for basic grid supply projects; and $80/MWh for desired land use grid supply projects and net metered projects above 2 MW.

Non-Residential Net Metered > 2 MW	40 MW	$3,692,800
Basic Grid Supply	130 MW	$6,000,800
Desired Land Use Grid Supply	130 MW	$12,001,600
Community Solar	150 MW	$15,579,000[25]
TOTAL	**750 MW**	**$66,701,200**

For projects in the administratively determined incentive program except community solar projects, MW targets would be set in three-month increments to mitigate risk of procuring the entire year's allocation of capacity at incentive levels that are higher than necessary, as has happened in other states. Community solar projects will be approved pursuant to the Pilot Program's competitive process, or as set forth in the to-be-determined permanent community solar program.

For projects in the competitive solicitation incentive, MW targets would be set annually and divided into tranches based on the auction categories, and subject to budgeted dollar allocations.

V. COST CAP CALCULATION

In determining which set of megawatt targets to adopt, the Board also needs to examine what is possible under the cost cap established by the Clean Energy Act. Indeed, the State's ambitious targets are tempered by the need to mitigate the impact to ratepayers of these clean energy programs. One of the key goals for the Successor Program is therefore to keep ratepayer costs within the statutory cost cap established by the Clean Energy Act, while meeting New Jersey's long-term solar targets and other societal goals. While the Legislature adopted the cost cap to manage the total amount of ratepayer spending devoted to certain clean energy programs, it also expressed clear support for meeting long-term carbon emissions reduction goals and a robust clean-energy economy.

Section 38(d)(2) of the Clean Energy Act reads as follows:

> *… the board shall ensure that the cost to customers of the Class I renewable energy requirement imposed pursuant to this subsection shall not exceed nine percent of the total paid for electricity by all customers in the State for energy year 2019, energy year 2020, and energy year 2021, respectively, and shall not exceed seven percent of the total paid for electricity by all customers in the State in any energy year thereafter.*

[25] Budget cap assumes all community solar projects are LMI projects.

Section 38(d)(3) of the Clean Energy Act reads as follows:

> *… modify or replace the SREC program to encourage the continued efficient and orderly development of solar renewable energy generating sources throughout the State.*

The Board initiated a proceeding on the definition of the cost cap in December 2019, followed by public comments due January 2020. On January 6, 2020, Staff issued a "Staff Straw Proposal on Defining the Clean Energy Act of 2018's Statutory Cost Caps," which discussed, among other topics, the appropriate way to determine the relevant cost caps (Proposal). Following the Proposal, Staff held an in-person stakeholder meeting on January 15, 2020, and requested written comments be filed by January 31, 2020. This Straw Proposal represents the next step in recommending an approach on how the Board should calculate the cost cap going forward.

The Clean Energy Act's statutory text determines compliance with the Cost Cap through the use of the following equation ("Cost Cap Equation"):

$$\left[\frac{(Cost\ to\ Customers\ of\ the\ Class\ I\ Renewable\ Energy\ Requirement)}{(Total\ Paid\ for\ Electricity\ by\ all\ Customers\ in\ the\ State)}\right] \mathbf{x}\ 100\%$$

The programs subject to the cost cap are:

1. The legacy Solar Renewable Energy Certificate (SREC) program;
2. The Transition Incentive Program that provides Transition Renewable Energy Certificates (TRECs);
3. Any successor program that may be adopted by the Board in the future (Solar Successor Incentive Program); and
4. Class I Renewable Energy Certificates (RECs) used to meet the RPS.

Collectively, Staff refers to these programs as the "Cost Cap-Applicable Programs." The statute specifically omits costs of Offshore Wind Renewable Energy Certificates (ORECs) from the numerator, but the costs are part of the total paid for electricity by all customers in the State. The Clean Energy Act further directed that the Board "shall take any steps necessary to prevent the exceedance of the cap on the cost to customers including, but not limited to, adjusting the Class I renewable energy requirement."

a. Estimating the Denominator (Total paid for electricity by all customers in the State)

In calculating the Cost Cap Denominator, Staff looks to the plain language of the Clean Energy Act's requirement that the Cost Cap Calculation include "total paid for electricity by all customers in the State." Calculating a "total paid for electricity" requires consideration of payments for electricity by customers to both utilities and non-utilities.

Staff's recommended calculation of the Cost Cap Denominator starts with the calculations performed by the Energy Information Administration (EIA), which performs extensive analysis on a monthly and annual basis regarding total electricity sector expenditures in New Jersey. The EIA "Form-861 Monthly, Schedule 2. Sales to Ultimate Customers" details items that are included in the EIA calculation:

Revenue that should be included on this form are revenue from sales of electricity to those customers purchasing electricity for their own use and not for resale, revenue from state and local income taxes, energy or demand charges, customer service charges, environmental surcharges, franchise fees, fuel adjustments and other miscellaneous charges applied to end-use customers during normal billing operations. Monthly revenue data include end use customers who have permission to directly purchase power from the wholesale market, please note that wholesale revenue data is collected on EIA-861A.

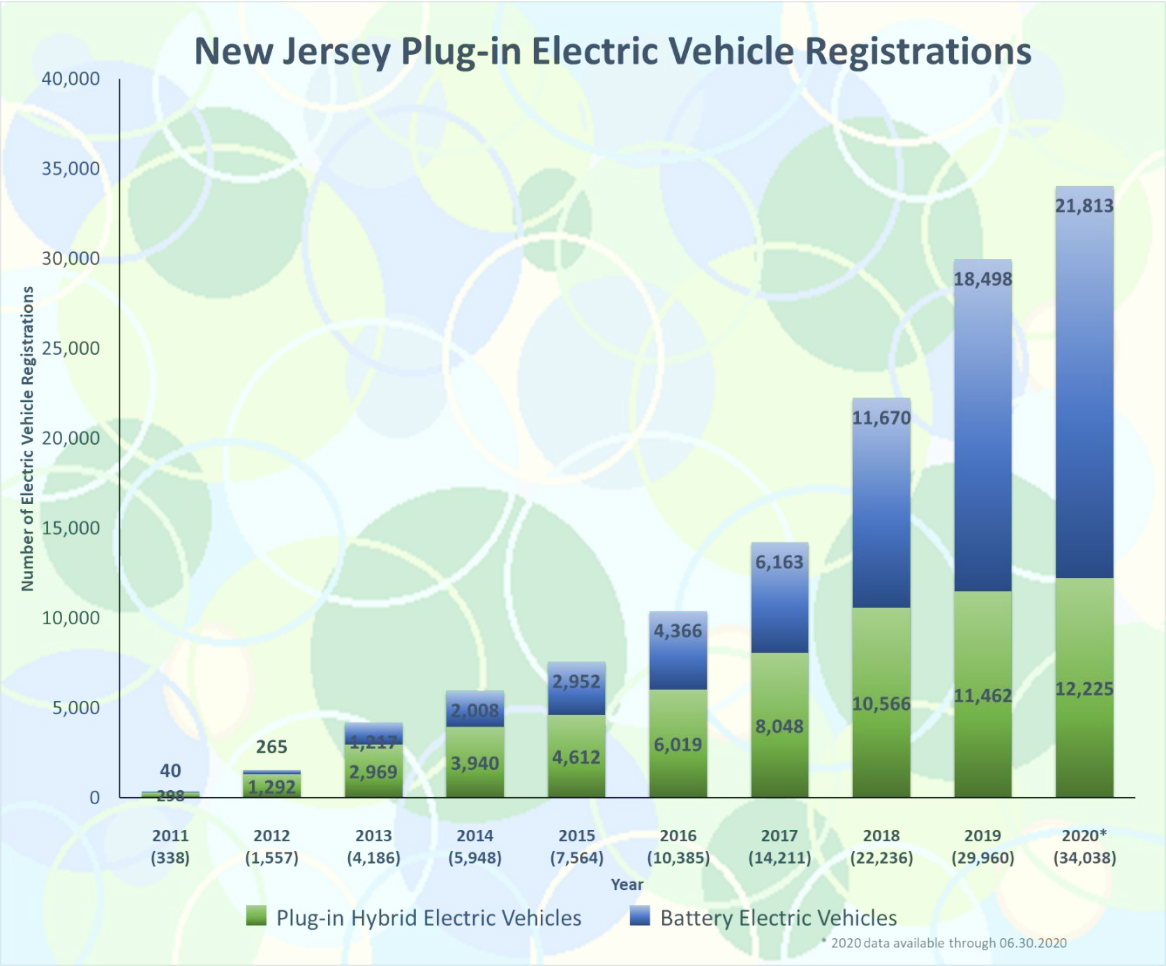
For 2020, the EIA has not completed its final tabulation and adjustments, but total sales of electricity in New Jersey are expected to be around $9.8 billion. This number is likely influenced by COVID-19 pandemic impacts, and would have been slightly higher if not for the pandemic. Additionally, Staff expects continued upward pressure on total electricity sales over the next decade for several reasons, including:

- Future and continued clean energy subsidy costs, such as Zero Emission Certificates (ZECs),[26] ORECs, and energy efficiency (EE) expenditures;
- Continued robust sales growth in electric vehicles, see Figure 1 below[27]; and
- Continued and increasing demand for electrification of buildings and public transportation.

[26] The Zero Emission Certificate proceeding is ongoing at this time of publication. Staff makes no presumptions as to the outcome of the proceeding, and will modify the cost cap as necessary in accordance with the Board's final decision.

[27] Electric vehicle infographic from NJDEP (2020), available at https://www.drivegreen.nj.gov/dg-electric-vehicles-basics.html.

Figure 1: Electric vehicle registrations in New Jersey 2011-2020



Behind-the-Meter Host-Owned Solar

Staff likewise proposes to include installation costs associated with all net metered, behind-the-meter solar projects that are host-owned. EIA collects and integrates information from both net metered and non-net metered (distributed generators) systems and so this data is already included in the information Staff obtains from EIA, however they do not track the installation costs associated with host-owned systems. Staff anticipates that these costs will not add a large amount to the denominator, but for completeness recommends including these costs as part of the total paid for electricity.

Combined Heat & Power

The EIA data collected typically includes CHP facilities of over 1 MW in their cost estimates based on data from Form EIA-860. However, New Jersey has approximately 300 MW of CHP facilities under 1 MW in size.[28] For these smaller facilities, EIA collects information about sales through Schedule 3B and is included

[28] NJ EMP 2015 Update - New Jersey has almost 3,000 MW of CHP which is one of the highest concentrations of CHP in the country, but only 10 percent is classified as DG.

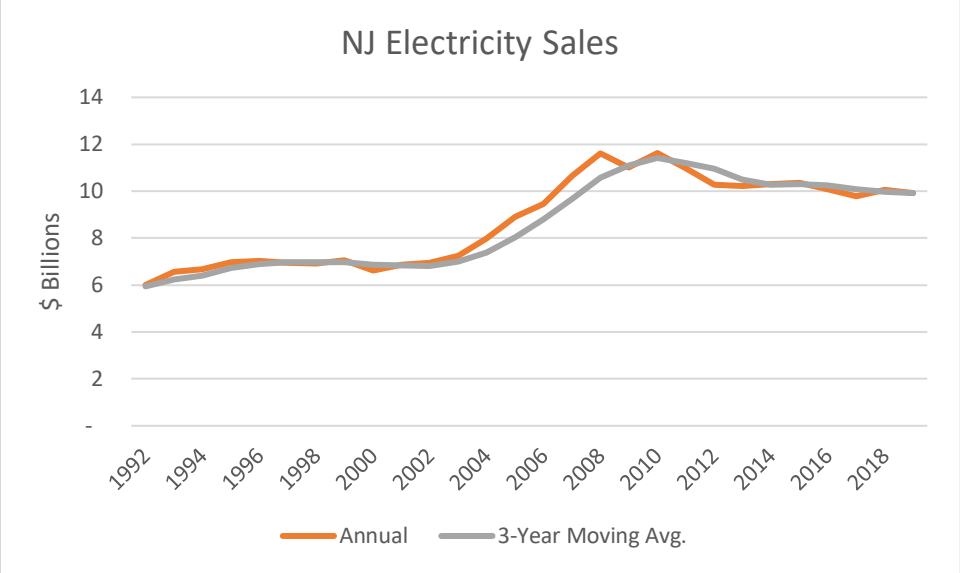
in the total sales data, and Staff therefore does not propose to estimate any additional CHP costs for inclusion in the denominator.

Future Clean Energy Incentive Costs

The dynamic transition to a cleaner economy and the incentives needed to help that transition will provide tremendous benefits for cleaner air, reduced greenhouse gas emissions, improved public health, and a stronger economy. Though significantly smaller than the overall value of benefits produced, some clean energy incentives do have a cost that is not yet reflected in the EIA sales data. The current ZEC subsidy of $0.004/kWh (for the three-year period 2019-2021) represents about a 3% increase in total cost of electricity. The ORECs won't materialize until the first phase of offshore wind projects becomes operational around 2024, but will likely be an increase of around 1% of total electricity cost in New Jersey from the first 1,100 MW project. New Jersey's current goal for offshore wind is 7,500 MW by 2035. New energy efficiency investment will ramp up over the next three to five years to an estimated spending of 3-5% of current total electricity cost. Offsetting these costs will be a reduction in total cost due in large part to the energy efficiency measures incented by the EE program and additional energy efficiency improvements provided through enhanced building and appliance codes. However, for many energy efficiency projects, the capital investment occurs in the early years and the energy savings stretch out over a longer period.

Over the past 30 years, the total paid for electricity in New Jersey has increased at an annual rate of just under 2%. Looking at just the past 10 years, as shown in Figure 2, the total paid for electricity has decreased slightly, but remained around $10 billion.

Figure 2: Total Annual Sales of Electricity in New Jersey 1992-2019



After considering the factors detailed above – some likely to decrease the quantity of electricity sold and others likely to increase both the unit price and quantity of electricity sold – and for purposes of the cost cap calculation, Staff proposes to estimate the denominator (the "total paid for electricity by all customers

in the State") using a net annual increase of 0.5%, with an additional adjustment for ORECs starting in 2024. Staff also notes that historical variation in annual total electricity sales creates added challenges and erodes predictability for planning and managing the State's solar programs. Therefore, Staff also recommends using a three-year moving average for the denominator. The use of a three-year moving average will bring added predictability by smoothing out the annual variation as shown in Figure 2. EIA and other analysts often use moving averages for forecasting or forward modeling.

Based on the above methodology, Table 4 shows estimates for the denominator of the cost cap equation and corresponding cost cap based on those estimates.

Table 4: Estimated Cost Cap and Denominator, 2019-2030

Energy Year	Estimated 3-yr Moving Avg. (with BTM host-owned solar and OREC adjustments) ($ Millions)	Annual Cost Cap ($ Millions)	Cap %
2019	10,085	908	9%
2020	9,920	893	9%
2021	9,965	897	9%
2022	10,016	701	7%
2023	10,075	705	7%
2024	10,193	713	7%
2025	10,310	722	7%
2026	10,426	730	7%
2027	10,600	742	7%
2028	10,773	754	7%
2029	10,942	766	7%
2030	11,102	777	7%

b. Estimating the Numerator (Cost to customers of the Class I renewable energy requirement)

Estimating future program spend associated with the SREC, TREC, and other Class I REC programs is critical for determining the amount of cost cap headroom available to the Successor Incentive Program.

Estimating the Annual Cost of SRECs

The annual cost of the SREC program is a function of two main factors: the quantity of SRECs retired for compliance purposes (as produced by eligible generators on an annual basis) and the value of each SREC.

In terms of quantity, NJBPU closed the SREC program to new entries on April 30, 2020, which means the universe of projects eligible to receive SRECs is largely known, aside from two factors. First, the amount of solar produced in any given year is dependent on insolation, but is fairly smooth on a multi-year basis. Second, three Subsection (t)-eligible projects received Board approval to enter the SREC program prior to the April 30, 2020 closure of the SRP and were permitted up to two years to reach operational status. Further, because the SREC program started in 2008 with 15-year terms, the earliest projects will start rolling off of the program in 2023, initiating a downward trend in the annual number of SRECs produced, ending in approximately 2035 when no units will remain in the program (other than the three Subsection (t) projects granted up to two years for delayed COD).

Because SRECs are a traded product, any forecast of SREC prices is ultimately an estimate. However, the total costs of the SREC program are an important element in the calculation of the cost cap. As part of the TI stakeholder process, Cadmus Group produced a High, Medium, and Low sensitivity of SREC prices going forward. In the Successor Program Capstone Report, Cadmus assumed SRECs traded at 80% of the solar alternative compliance payment Solar Alternative Compliance Payment (SACP) price. In response to the Cost Cap Proceeding, several industry participants submitted comments suggesting that future SREC prices were expected to trade significantly below the Medium sensitivity produced by Cadmus. In particular, parties pointed to the fact that registration for the SREC program closed once 5.1% of New Jersey's total load was served by SRECs; however, the closure rules allowed planned projects that had not reached completion to also enter the program. The result of this closure process is that the SREC program is anticipated to remain slightly over-supplied on an annual basis, which tends to drive SREC prices down. However, SREC prices traded on the Flett Exchange show that SREC prices today remain trading at 80-85% the SACP. Staff proposes to use 75% of the SACP as the basis for estimating total costs; Staff will recalculate forecasted total costs based on actual SREC performance. Staff assumes the following annual production schedule for SRECs (Table 5):

Table 5: Estimated SREC Production and Costs, 2019-2030

Energy Year	SREC Estimated Retirements (MWh)	75% SACP Price ($/MWh)	SREC Cost Before Net Benefits ($ Millions)
2019[29]	2,747,676	217.29	597
2020	3,287,339	218.61	719
2021	3,823,650	186.00	711
2022	4,036,075	178.50	720
2023	3,868,305	171.00	661
2024	3,650,500	163.50	597
2025	3,550,149	156.00	554
2026	3,163,899	148.50	470
2027	2,615,424	141.00	369
2028	1,920,845	133.50	256
2029	1,387,136	126.00	175
2030	1,068,680	118.50	127

The total cost of the SREC program is the annual quantity of SRECs retired multiplied by the projected price for that year.

Estimating the Annual Cost of TRECs

In calculating the expected cost of the TREC program, Staff takes the expected solar production from projects registered in the TREC program that have reached commercial operation and have begun to receive TRECs. Staff then adds the expected solar production from 66% of the capacity for projects

[29] Values in Energy Years 2019 and 2020 are actual data.

registered in the TREC program that have not yet reached commercial operation.[30] Total TREC cost estimates are shown in Table 6 below:

Table 6: TREC Cost Estimates, 2019-2030

Energy Year	TREC Estimated Annual Costs ($ Millions)
2019	-
2020	0.4
2021	19
2022	66
2023	111
2024	125
2025	125
2026	125
2027	125
2028	125
2029	125
2030	125

Estimating the Annual Cost of Class I RECs

The cost of Class I RECs varies from year to year, so Staff assumes $13/Class I REC for purposes of the cost cap modeling. The Clean Energy Act also allows the Board to "…take any steps necessary to prevent the exceedance of the cap on the cost to customers including, but not limited to, adjusting the Class I renewable energy requirement," which Staff interprets as allowing the Board to reduce the amount of Class I RECs purchased in order to keep the total cost of the cost-cap eligible programs below the cost cap. Thus, unlike the other programs, which are structured as payments to eligible resources over a defined

[30] Staff assumes that 33% of the expected capacity is expected to be "scrubbed" – i.e., not reach commercial operation, based on past experience with the SRP pipeline and the percentage of projects that fail to reach completion.

number of years, the number of Class I RECs purchased in a given year may vary based on the available cost cap headroom. For the purposes of projecting the economic impact of Class I RECs over the years, Staff has modeled the projected costs of the Class I REC obligation through 2030, assuming the Board does not reduce the RPS to maintain compliance with the cost cap. Based on the annual increases in the RPS indicated in the Clean Energy Act, including a jump to a 35% RPS in 2025 and an increase to 50% in 2030, Table 7 shows estimated annual cost of Class I REC retirements after accounting for forecasted retirements of SRECs, TRECs, and ORECs. Note that Table 7 does not account for forecasted retirements from Successor RECs from Staff's proposed Solar Successor capacity targets, which would be subtracted from the Class I REC obligation on a MWh to MWh equivalency (as reflected in the Successor Program cost estimated in Table 8).

Table 7: Class I REC Cost Estimates, 2019-2030

Energy Year	Class I REC Estimated Annual Cost ($ Millions)
2019	79
2020	90
2021	121
2022	117
2023	138
2024	201
2025	248
2026	241
2027	220
2028	201
2029	179
2030	304

Adjustments to the Numerator to Reflect Net Benefits Associated with Solar

Staff recommends defining the cost of the Cost Cap Eligible programs as the net costs of the programs to customers, as this better represents the actual "cost to customers" of these Class I renewable energy programs. In order to more accurately reflect the total cost to customers, Staff recommends subtracting quantifiable annual net benefits that occur as a result of the State's solar investment from the amount spent on the Cost Cap Eligible programs. Staff notes that recently implemented utility-run energy efficiency programs that adopted the New Jersey Cost Test (NJCT) similarly quantified the net benefits associated with energy efficiency investments in New Jersey for use in program benefit-cost analysis. Staff proposes to adopt a similar approach here. The result is a cost cap calculation that Staff believes better reflects the full range of benefits and costs of the Cost Cap Eligible programs.

Specifically, for the purpose of this proposal, Staff recommends making the adjustments of energy benefits as discussed in more detail below.

Demand-Reduction-Induced Price Effects

The reduced load associated with solar deployment is expected to reduce indirect energy and capacity prices for all New Jersey consumers. PJM operates a single-clearing price market, and the price is set at the point that supply and demand meet. PJM determines the clearing price by creating a "supply stack" of all eligible resources based on their strike price. The least expensive resources are lower on the supply stack and are selected first. The penultimate least expensive resource is selected next, and so on, until supply matches the anticipated demand. However, solar investments reduce demand, which in turn tends to push prices down. This effect is often referred to as the Demand-Reduction-Induced Price Effect (DRIPE) and occurs in both PJM energy and capacity markets.

Studies of energy markets in both the U.S. (NREL 2018[31] and 2003,[32] LBNL 2021[33] and 2017,[34] Woo 2016[35]) and Europe (Hildmann 2015,[36] Roldan-Fernandez 2016[37]) have shown that reduced energy demand, attributable to behind-the-meter solar for example, reduces total demand in the wholesale market. The addition of low-marginal-cost supply of electricity through grid-supply solar projects shifts the merit-order

[31] NREL 2018. Jenkin, Thomas, Andrew Larson, Ben King, Mark Ruth, and Paul Spitsen. The Use of Statistically Based Rolling Supply Curves for Electricity Market Analysis: A Preliminary Look. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A20-70954. https://www.nrel.gov/docs/ fy18osti/70954.pdf.

[32] NREL 2003. Iannucci, J.J., L. Cibulka, J.M. Eyer, and R.L. Pupp. DER Benefits Analysis Studies: Final Report. September 2003. NREL/SR-620-34636.

[33] LBNL 2021. Mills, A., R. Wiser, D. Millstein, J.P. Carvallo, W. Gorman, J. Seel, and S. Jeong. The Impact of Wind, Solar, and Other Factors on the Decline in Wholesale Power Prices in the United States, in Applied Energy. Pre-print November 2020.

[34] LBNL 2017. Wiser, R., A. Mills, J. Seel, T. Levin, A. Botterud. Impacts of Variable Renewable Energy on Bulk Power System Assets, Pricing, and Costs. With Argonne National Laboratory, November 2017.

[35] Woo, C.K., J. Moore, B. Schneiderman, T. Ho, A. Olson, L. Alagappan, K. Chawla, N. Toyama, J. Zarnikau. 2016. Merit-order effects of renewable energy and price divergence in California's day-ahead and real-time electricity markets. Energy Policy 92 (2016) 299-312.

[36] Hildmann, M., A. Ulbig, G. Andersson. 2015. Empirical analysis of the merit-order effect and the missing money problem in power markets with high RES shares. IEEE Transactions on Power Systems, v 30 no. 3, May 2015.

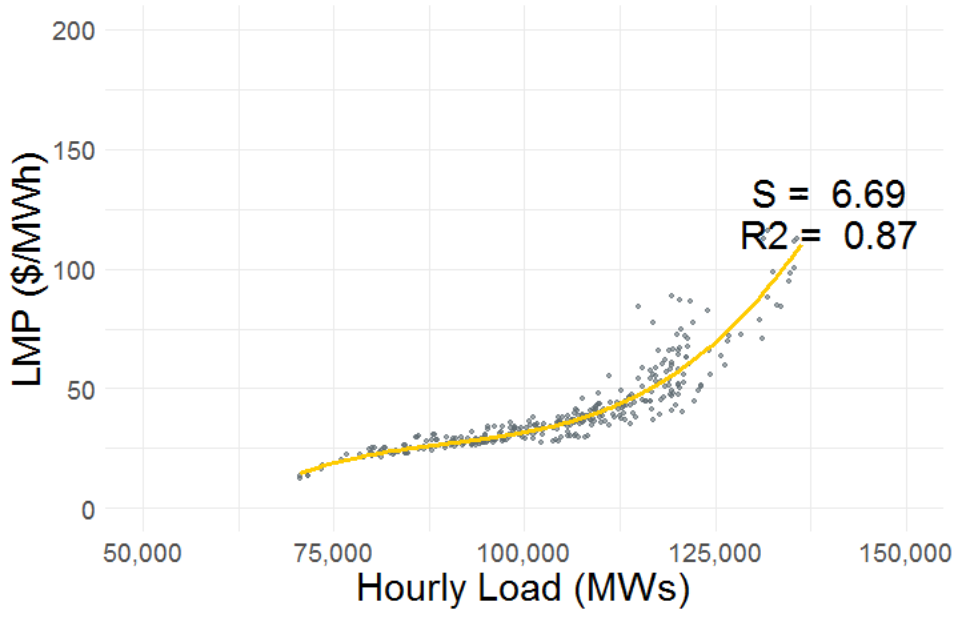
[37] Roldan-Fernandez, J.M., M. Burgos-Payan, J.M. Riquelme-Santos, A.L. Trigo-Garcia. 2016. The merit-order effect of energy efficiency. Energy Procedia v 106, December 2016, p 175-184.

supply curve to the right. These two effects translate directly into reduced wholesale prices for all market participants. These savings represent a societal benefit to all consumers in New Jersey, whether they invested in solar themselves or not, and is therefore appropriate to include as benefits from deploying solar energy projects in New Jersey. DRIPE effects are relatively small when expressed in terms of an impact on market prices. However, DRIPE impacts can be significant when expressed in absolute dollar terms and applied to all wholesale purchases for New Jersey consumers.

Electric Energy DRIPE

The NJCT calculates electric energy DRIPE by regressing historical electric energy prices as a function of load to determine the impact of reduced load caused by behind-the-meter solar, on electric energy prices. Research conducted in energy markets in the U.S. and Europe, as noted above, suggests there is also a merit-order effect from the addition of renewable energy, including solar, at prices below the locational marginal price (LMP). The reported merit-order effects from the addition of megawatt-hours of solar-generated electricity at relatively low prices impacted both the day-ahead and real-time markets studied. The additional renewable energy resulted in a reduction in average hourly LMP values ($/MWh). Figure 3 is an example of regressing electric energy prices as a function of load. This example, where S is the standard error and R2 is the R-squared statistic, is for a two-week winter period in PJM in 2015.[38] Staff proposes to use a value of $0.0000095/MWh to estimate the price benefits of electric energy DRIPE, based on values found in literature and ongoing energy efficiency cost test proceedings.

Figure 3: Regressing Electric Energy Prices as a Function of Load in PJM (2015)



[38] Id.

Electric Capacity DRIPE

The NJCT calculates electric capacity DRIPE using linear extrapolation of price differentials between the actual auction results and the scenario in which PJM removes 3,000 MW of capacity performance supply from the bottom of the supply curve in the Mid-Atlantic Area Council (MAAC) capacity zone. For example, 1,000 MW (measured in Unforced Capacity, or UCAP) of behind-the-meter solar would be credited with a price impact equal to one-third of the 3,000 MW figure developed by PJM. Values should be calculated on a delivery year basis (June–May). This methodology relies on publicly available PJM data. Staff proposes to use a value of $0.000833/MWh to estimate the price benefits of electric capacity DRIPE.

Environmental and Health Benefits

In addition to the electric savings benefits described above, Staff considered including benefits of improvements to air quality and reduced greenhouse gas emissions from solar energy. These benefits are specifically identified in the Clean Energy Act and the 2019 Energy Master Plan, and are commonly used in analysis of clean energy and environmental programs at both the federal and state level. To calculate net benefits and net costs to customers of solar programs, Staff recommends using the EPA Interagency Working Group values for the social cost of carbon dioxide (CO_2) as a proxy for the benefits associated with electricity produced by solar energy without greenhouse gas emissions.[39] Using the central values provided by EPA and updating to 2020 dollars per metric ton gives estimates of $53/ton CO_2. Converting to $/MWh using EIA's average emissions profile for New Jersey[40] yields $14/MWh for CO_2 and using PJM marginal emission values[41] gives an estimate of $29/MWh for CO_2 reduction.

In addition to benefits associated with reducing greenhouse gas emissions, installing solar energy projects leads to reduced harmful air pollutants from fossil fuel combustion, including sulfur dioxide (SO_2), nitrogen oxides (NO_x), and particulate matter (PM2.5). Dedoussi et al[42] estimate the average value of health benefits from reducing these pollutants across the majority of PJM territory (NJ, PA, DE, MD, KY, OH, VA, WV) at $41/MWh when replaced with renewable energy. Staff have not yet calculated the total value of these benefits.

Despite these real environmental and public health benefits, Staff is mindful of the need to mitigate the total cost of clean energy incentives on the ratepayer. Therefore, Staff proposes not to include the value of the social cost of carbon in calculating the cost cap at this time.

c. Cost Cap Tracking Methodology

On January 21, 2020, Governor Murphy signed into law amendments to the Clean Energy Act that provide the Board with more flexibility in calculating the cost cap. S. 4275 (2018), L. 2019, c. 448 (or "Cost Cap

[39] EPA values for emission reduction benefits were obtained from https://19january2017snapshot.epa.gov/climatechange/social-cost-carbon_.html
[40] https://www.eia.gov/electricity/state/newjersey/
[41] PJM 2020. 2015-2019 CO2, SO2 and NOx Emission Rates, April 9, 2020.
[42] Irene C. Dedoussi *et al* 2019 Environ. Res. Lett. 14 094003, *The co-pollutant cost of carbon emissions: an analysis of the US electric power generation sector*.

Legislation").[43] The Cost Cap Legislation specifically allowed the Board to utilize banking for EY 2022-2024, meaning that the Board can allow overspending of incentives in a given year as long as overage is mitigated later by a comparable amount of underspending. Staff recommends that the Board continue using a comparable approach to accounting for cost cap overages in subsequent energy years as well. This will allow the Board to smooth out the inevitable peaks and valleys in the costs of the Cost Cap Eligible Programs without disrupting New Jersey's clean energy agenda, and ensure that any overage in one year is tracked into the next year, such that total average costs remain below the cap. Importantly, there should be no difference in the total costs of averaging the cost cap calculation over a number of years, so long as the Board adheres to the long-term running average. The remedy in any given year for a cost overrun would be to decrease expenditures in subsequent years – this accounting treatment formalizes the process and provides greater transparency to the public.

d. Available Cost Cap Headroom

Based on the methodology described above to assign net costs for the cost to customers of the Class I renewable energy requirement, and to estimate the total amount paid for electricity by all customers in the State, Staff has estimated the available headroom within the cost cap for the Solar Successor Program and presents those estimates in Table 8 below (parentheses indicate a negative value). Additionally, the estimates of available headroom include the carryover of any unused headroom from the previous energy year. The continuing high cost of legacy SRECs and the annual increase in the Class I REC RPS produces a significant budget squeeze in EY 2026-2028.[44] The available annual budget is calculated as the sum of headroom, carryover, and electric benefits less the total of legacy SREC costs, TREC costs, and Class I REC costs. Table 8 also includes the cost estimate for the successor program given the proposed targeted buildout of solar capacity and the resulting surplus or deficit. For the purpose of estimating the cost of the Successor Program, Staff only counts the cost of successor RECs in the first full year after installation. In reality, these costs would start to accrue in the month a given project begins commercial operation.

Staff is cognizant that these projections are based on a series of assumptions, and the projections become less reliable over time as those assumptions compound. Staff recommends launching the Successor Program with the proposed capacity and budget targets. Upon the annual budget and cost cap true-up, if Staff finds that a deficit remains, the Board has a series of tools it can use to reduce costs, including carrying over the deficit until later years, reducing the overall RPS, or reducing future incentive levels.

[44] The cost cap is highly sensitive to legacy SREC prices. Table 8 shows the surplus or deficit from all Cost Cap Applicable Programs presuming SREC prices trade at 75% of the SACP. If SREC prices remained at today's high of 85% of the SACP, the Cost Cap Applicable Programs would be projected to run a considerable deficit from 2024-2032. If SREC prices fell to 70% of the SACP, there would be no deficit at all.

Table 8: Projected Solar Successor Costs and Annual Surplus/Deficit

Energy Year	Cap Space on Annual Basis (pre-Solar Successor Program; no carryover) ($ Millions)	Prior Year Carryover ($ Millions)	Cost of Successor Program for Annual Target Buildout ($ Millions)[45]	DRIPE Benefit of New Build ($ Millions)	Benefit from Reduced Class I REC Obligation ($ Millions)	Surplus or Deficit (including prior-year carryover) ($ Millions)[46]
2019	308		0	0	0	308
2020	170	308	0	0	0	478
2021	139	478	0	0	0	617
2022	(100)	617	First year build	0	0	517
2023	(96)	517	67	20	10	384
2024	(100)	384	133	39	23	213
2025	(95)	213	200	59	34	11
2026	4	11	260	79	45	(121)
2027	139	(121)	320	100	56	(145)
2028	284	(145)	380	120	68	(54)
2029	399	(54)	434	141	79	130
2030	334	130	488	162	90	228

VI. IMPLEMENTING THE SUCCESSOR PROGRAM AND TRANSITIONING FROM THE TRANSITION INCENTIVE PROGRAM

a. Transitioning to the Successor Program

In order to prepare the transition to the Successor Program, Staff recommends the following timeline to end the TI Program and initiate the Successor Program:

1. Staff will engage with stakeholders over four work sessions to discuss this Straw Proposal, with the intent of garnering final feedback prior to making final recommendations to the Board.

[45] The cost of the successor program includes a 10% incentive value decline for every three-year period.
[46] Note that all numbers in this table have been rounded to the nearest million.

2. Following the close of the stakeholder process, the Board will issue an Order directing Staff to provide 30 days' notice of the close of the TI Program. The Board will separately issue an Order establishing the incentives and other program criteria to initiate the Successor Program upon the closure of the TI Program and will additionally propose rules for the Successor Program.

3. Upon the close of the TI Program and the opening of the Successor Program, residential net metered projects and non-residential net metered projects that are 2 MW or less will immediately be able to register for the administratively determined incentive.

4. The administratively determined incentive for community solar projects will be available immediately after projects are granted conditional approval by the Board, with exceptions noted below.

5. The competitively determined incentive will be the subject of a brief stakeholder process after a solicitation administrator has been retained, with the aim of finalizing program design and conducting the first solicitation in Q3 2021.

Net metered projects that have already registered in the TI Program, and community solar projects and Subsection (t) projects that have submitted applications to the Board prior to the date of an Order announcing the initiation of the Successor Program, or that have received conditional certification from the Board prior to the date of said Order, will retain their TI-specific incentive as long as projects meet their respective deadlines as established in the TI rules adopted October 2020.[47] Projects that miss their deadlines will move into the Successor Program.

Community solar projects awarded conditional approval in Program Year 1 (PY1) and Program Year 2 (PY2) are eligible for the TI Program provided projects adhere to the mandated schedule as defined in the Order granting the projects conditional approval (or as amended by subsequent Board rules or regulations).[48] Otherwise, the projects will transition into the Successor Program. Projects awarded in a potential Program Year 3 or in the permanent community solar program will enter the Successor Program.

b. Annual Schedule and True-up

Staff proposes to establish the Successor Program's megawatt targets based on a forecast of future costs, subject to the cap established in the Clean Energy Act as well as the cost balancing mechanism established in SB-4275.[49] Future program costs will be forecast based on the most recent data available from RPS compliance reports submitted by Third Party Electric Suppliers and EDCs. The RPS requires compliance on an energy year basis, which spans from June 1 to May 31 of the following year; compliance reports are

[47] I/M/O the Community Solar Energy Pilot Program, BPU Docket No. QO18060646 et al. (Dec. 20, 2019), available at https://www.nj.gov/bpu/pdf/boardorders/2019/20191220/12-20-19-8D.pdf.
[48] *See, generally*, *id.*; *see, also*, I/M/O the Community Solar Energy Pilot Program Year 2 Application Form and Process, BPU Docket No. QO20080556 (Oct. 2, 2020), available at https://www.nj.gov/bpu/pdf/boardorders/2020/20201002/8C%20-%20ORDER%20Community%20Solar%20Year%202%20Application%20Form%20and%20Process%202020-10-01.pdf.
[49] *See,* P.L. 2019, c.448.

due on December 1. Staff will continue to release monthly metrics reporting solar projects registered, in construction, and completed.

During the first quarter of each calendar year, Staff will issue for public comment a proposed allocation of budget-based megawatt targets for each of the market segments within the administratively set incentive program and the tranches within the competitive solicitation program. Taking into account the stakeholder comments, Staff will announce the capacity allocations to each market segment and tranche prior to start of the energy year on June 1. In light of the pendency of comments on this Straw Proposal, the final schedule for program allocations in this first year of the Successor Program may not completely follow the proposed schedule above.

c. Addressing the Interaction with the RPS Program

The Successor Program will be integrated into the RPS Program as a carve-out of the compliance requirement for Class I renewable energy. In the TI Program, TRECs are retired by the Program Administrator on behalf of the Third Party Suppliers and Basic Generation Service providers; these TRECs will be subtracted from the compliance obligation calculated for each regulated entity at the end of each energy year. Staff proposes the same treatment be applied to RECs created within the Successor Program.

d. Future Program Elements to Consider

As noted throughout this Successor Straw, Staff is proposing a Successor Program designed to meet multiple policy objectives, including but not limited to aggressive clean energy procurement at low cost; support for the local solar industry; equity and inclusion; and land and environmental protection and preservation. Staff also aims to establish a relatively simple program for industry to understand and for the State to administer.

Staff has considered a multitude of ways in which the Successor Program design could be utilized to the advantage of certain policy objectives. For example, dividing the competitive solicitation into tranches is designed to enable the Board to allocate available funding differently to each tranche so as to steer development toward certain priorities (for example, the built environment), while still selecting the lowest cost projects among those high-priority areas. Similarly, the establishment of the permanent community solar program is designed to ensure that all New Jersey residents can access solar energy, even if they are unable to procure it directly due to financing or infrastructure limitations. Additionally, the program's emphasis on subscribing low- and moderate-income customers ensures that developers are specifically targeting traditionally underrepresented communities for inclusion.

Staff is cognizant that despite efforts to target State policy priorities, such design features could potentially fall short of achieving State goals. Staff proposes to roll out the Successor Program as described herein, while maintaining robust metrics to assess market performance of the Successor Program each year. Upon evaluation of the program's market performance, the Board may desire to implement additional design elements, such as targeted tranches or the use of adders and subtractors, to more effectively achieve State policy goals. Those design elements would be considered in a separate stakeholder proceeding, if the Board deems the program to be underperforming in certain market segments. Staff is particularly interested in market performance as it relates to siting in environmental

justice communities, low-income household participation, new construction, and schools and other government-owned properties.

VII. COMMUNITY SOLAR PERMANENT PROGRAM

The Clean Energy Act laid out the framework enabling community solar implementation in New Jersey. Community solar aims specifically to increase access to solar energy, in particular for low- and moderate-income households, by enabling electric utility customers to participate in a solar generating facility that can be accessed remotely from their own residence or place of business.

Pursuant to the Clean Energy Act, the Board first established a three-year Community Solar Energy Pilot Program (Pilot Program), approved by the Board on January 17, 2019, and officially launched on February 19, 2019 upon the publication of the rules in the New Jersey Register. The Pilot Program has served to both demonstrate interest in community solar and to test the implementation of this new type of solar generation. The Program Year 1 application period opened on April 9, 2019 and closed on September 9, 2019. The Board received 252 applications representing over 650 MW and on December 20, 2019 granted conditional approval to 45 projects, representing nearly 78 MW. Pursuant to the Pilot Program rules, it was expected that at least 40% of the awarded capacity would go to projects defined as LMI projects – i.e., projects that commit to allocating at least 51% of project capacity to low- and moderate-income subscribers. In fact, all 45 projects selected by the Board have committed to being LMI projects. The first two projects reached commercial operation in January 2021.

In light of the Program Year 1 success, the Board has decided to double the Program Year 2 capacity to 150 MW. The Program Year 2 application form was approved on October 2, 2020, and applications were due no later than February 5, 2021. Staff is currently in the process of reviewing the applications received, and is expected to announce project awards in Spring 2021.

In the summer of 2020, the Board conducted a stakeholder process to discuss lessons learned from Program Year 1 and possible improvements to the Pilot Program rules and regulations. In light of stakeholder feedback as well as the Board's own experience during the first year of the Pilot Program, the Board proposed two rule amendments on October 2, 2020. The Board is now reviewing public comments on the rule amendments and expects to act on them in the near future.

Building on the experiences of the Pilot Program, the Clean Energy Act mandates that the Board establish a Community Solar Permanent Program (Permanent Program) by February 2022. Staff intends to develop the Permanent Program in conjunction with the Successor Program in order to ensure strong program coordination. Staff is currently weighing two primary options for implementation of the Permanent Program:

a. Option 1 is to rollover and continue the Pilot Program structure and design. Specifically, Option 1 would maintain the process of an annual competitive solicitation in which projects are scored according to a qualitative evaluation rubric set by the Board, and selected in order of highest score within each EDC territory until a pre-determined MW cap is reached. As in the Pilot Program, Staff expects that the evaluation criteria would favor projects that are LMI projects, located on

preferred siting, have strong community collaboration, provide high levels of savings and favorable terms to subscribers, and provide additional community benefits.

b. Option 2 would eliminate the annual competitive solicitation and instead implement a first-come, first-served model, subject to an annual MW- or cost-based cap as discussed earlier in the Cost Cap Calculation and Megawatt Targets sections. To ensure that community solar continues to select only the highest quality projects, the Permanent Program would instead include very high requirements for entry, set to reflect the characteristics that would be expected of projects selected under the Pilot Program's competitive solicitation model. For instance, the Permanent Program would only be open to LMI projects located on preferred siting, which provide at least 10% savings to subscribers and have written evidence of support from the local community. Projects would also be expected to meet higher maturity requirements (e.g., escrow requirement, completed interconnection study, and completed siting permits).

In addition to the overarching design described above, the Board will need to determine whether to modify any of the other Pilot Program rules, or whether they can be rolled over into the Permanent Program. Staff has provided below a brief description of the Pilot Program rules[50] and preliminary suggestions to guide stakeholder feedback on how these topics should be addressed in the Permanent Program.

a. Project siting requirements: The Pilot Program rules state that community solar projects are not allowed on preserved farmland. Projects are also not allowed on land designated as Green Acres preserved open space or on land owned by NJDEP unless those projects are granted special approval by NJDEP. All other siting criteria are set via the evaluation criteria, with higher scores assigned to projects on "high-preference" sites (e.g., rooftops, parking canopies, brownfields, and landfills).

   Community solar projects in the Permanent Program will be enveloped into the new siting requirements for grid supply solar facilities, as described earlier in the "Solar Siting" section. Staff also intends to work closely with NJDEP, the Department of Agriculture, and other relevant siting agencies to ensure optimal siting of community solar projects. Beyond these specific requirements, if the Board chooses to maintain a competitive solicitation model (Option 1), Staff proposes to maintain current siting requirements, and continue to give scoring preference to projects located on preferred sites. If the Board were to move towards a first-come, first-served model (Option 2), Staff recommends that the Board restrict eligibility to the Permanent Program to only those projects considered "high-preference" sites in the Pilot Program (particularly rooftops, parking canopies, landfills, and contaminated lands).

b. Subscription Requirements: The Pilot Program rules set out specific parameters for subscriptions to a community solar project. Among others, they state that that each community solar project must have a minimum of 10 subscribers and a maximum of 250 subscribers per MW of installed capacity. All rate classes are eligible for participation in a community solar project, but no

[50] This summary of the Pilot Program rules is provided for informational purposes only, and does not represent a legal interpretation of the Board's rules or regulations. Stakeholders wishing to know more about the Pilot Program should read the rules at N.J.A.C. 14:8-9.

subscriber can participate in more than one community solar project. Community solar subscriptions may not exceed 100% of the subscriber's historic annual usage, and cannot exceed 40% of a community solar project's total annual net energy. Subscriptions are portable and transferrable back to the project owner or community solar subscriber organization. Staff does not currently believe that modifications to the Pilot Program's subscription requirements are necessary, and recommends that the Permanent Program adopt similar rules.

c. Community Solar Bill Credits: The value of the community solar bill credit in the Pilot Program was set at retail rate net metering, inclusive of supply and delivery charges, and excluding fixed, non-by-passable charges. The Pilot Program rules also establish the mechanism through which credits are allocated and managed. This includes a provision that bill credits can carry over from monthly billing period to monthly billing period until the end of the annualized billing period, at which time excess credits shall be compensated at the avoided cost of wholesale energy.

   With respect to the value of the bill credit, Staff recommends that the Pilot Program bill credit calculation be maintained for the Permanent Program. With respect to the process for allocating and managing bill credits, Staff is proposing to accelerate deployment of consolidated billing, and to otherwise readopt the Pilot Program rules.

d. Low- and Moderate-Income (LMI) Provisions: The Pilot Program rules define a low- and moderate-income subscriber for the purposes of community solar and describe the eligibility criteria that may be used for income verification. The rules also require that at least 40% of the annual capacity allocated to community solar projects be allocated to LMI projects.

   With respect to the LMI eligibility criteria, Staff believes that the Board should build on the experience of the Pilot Program to expand eligibility verification criteria where possible, while maintaining measures to ensure that subscriptions are indeed being allocated to those households who can benefit the most from increased access to clean energy and the associated bill savings. In addition, with respect to setting the minimum percentage of projects designated as LMI projects, if the Board chooses to maintain a competitive solicitation model (Option 1), Staff proposes to maintain the current LMI requirements and to continue giving higher scores to LMI projects. If the Board were to instead decide to implement a first-come, first-served model (Option 2), Staff recommends that the Board restrict eligibility to the Permanent Program to only LMI projects.

e. Codes and Standards: The Pilot Program rules incorporate by reference the Board's solar interconnection standards and all applicable codes, standards, and licensing requirements applicable at the time the community solar project is constructed. The rules also require that the EDCs make available and update hosting capacity maps in a commercially reasonable fashion. Staff does not currently believe that modifications to the Pilot Program's codes and standards requirements are necessary, and recommends that the Permanent Program adopt similar rules.

f. Consumer Protection: The Pilot Program rules include substantial consumer protection provisions on matters relating to subscriptions; marketing, advertising, and solicitations; contracts; disclosure statements; non-discrimination; inquiry and remediation; and document retention.

The rules also require that subscriber organizations register with the Board no less than 30 days prior to first conducting community solar business operations in New Jersey. Staff does not currently believe that modifications to the Pilot Program's consumer protection requirements are necessary, and recommends that the Permanent Program adopt similar rules.

g. Reporting: The Pilot Program rules require that the EDCs provide monthly electronic reports on community solar project interconnections and energy production to the Board. The rules also require that the Board be notified of any change in the project developer, owner, or operator, and be kept apprised of major project developments. Staff does not currently believe that modifications to the Pilot Program's reporting requirements are necessary, and recommends that the Permanent Program adopt similar rules.

VIII. QUESTIONS FOR STAKEHOLDER FEEDBACK

Staff requests feedback on any and all elements of this Successor Straw, including program design, administrative processes, financial proposals, and megawatt targets. Staff is particularly interested in responses to the questions below and additionally welcomes further feedback not covered by the prompts.

Section III: Staff Recommendations: Successor Program Incentive Design

Overall program design: Staff proposes to establish a bifurcated Solar Successor Incentive Program in which residential projects, community solar projects, and non-residential net metered projects 2 MW or smaller are offered an administratively set $/MWh incentive. All other projects would participate in the competitive solicitation.

1. Please comment on the benefits and consequences of this suggested division. Does this program design provide a pathway to maximizing solar development while minimizing ratepayer costs and supporting the industry? Please explain and include alternative suggestions if you believe there is a better approach that Staff should consider.

Administratively determined incentive for small net metered and all community solar projects

2. Please comment on the proposed breakdown of market segments in the administratively set program (e.g., net metered residential, net metered non-residential rooftop and canopy, net metered non-residential ground mount, community solar, and LMI community solar). Would you suggest any changes, and if so, why?

3. As currently proposed, all net metered projects in the administratively set program would qualify for an incentive of $85/MWh for the first three-year period (EY 2022-2024); community solar projects would qualify for an incentive of $70/MWh, and community solar LMI projects would receive an incentive of $90/MWh. Please comment on these proposed incentive levels and if you disagree, please reference specific concerns with the modeling or historic performance assumptions used to develop the proposed levels.

4. The Straw proposes that selected projects would receive a 15-year qualifying life, consistent with the TI Program. Staff seeks comments on whether this is the appropriate term due to the nature of heavily discounting outer-year incentives, as well for consistency with the proposed competitive solicitation program. Please comment on this proposal and explain any alternative suggestions.

5. Staff proposes to establish annual capacity allocations for each market segment on an annual basis, as discussed in the Cost Cap section. The annual program capacity allocation would be divided (by four) into a quarterly allocation. Developers would then be able to reserve a spot within each quarter's capacity allocation.

a. Staff proposes to allow projects to reserve capacity against the quarterly capacity allocation on a first-come, first-served basis. Please provide any comments on this proposal.

b. Staff anticipates that there may be situations in which a quarter's allocation becomes over-subscribed. How should the Board handle over-subscription?

c. What different or additional measures could the Board take to ensure that there is sufficient opportunity to participate in the incentive program throughout the year?

6. Concern of "ghost projects" or "queue sitting" threatens the productive functioning of the incentive program. Please comment generally on the slate of project maturity requirements as proposed on page 13 of the Successor Straw or suggest alternative bidding requirements, including minimum criteria to demonstrate project maturity, site control, or escrow amounts to discourage speculation.

7. Staff proposes that projects awarded within a quarterly window pay a fee to the program administrator to cover the costs of administering the program. The fee would vary based on project size (under 25 kW, between 25 kW and 500 kW, and over 2 MW). Please comment on what fee should be required for the three project sizes.

8. Staff proposes that developers seeking an extension beyond the initial 12-month deadline must submit a deposit, refundable upon project completion, equal to 10% of the project cost and not to exceed a value determined with stakeholders. Please comment on how Staff should determine the deposit fee for a deadline extension request.

9. Staff proposes to set incentives every three years to provide market certainty. However, using an administratively set incentive risks the potential for market under or over performance in any particular sub-market. What measures could be used to stop an overheated market and prevent inefficient use of incentive funds? Should the Board consider implementing measures such as a declining block structure, downward adjustments on the quarterly capacity allocation for the market segment, or others? How should the Board consider and assess market underperformance?

10. What are the benefits and consequences of allowing or prohibiting behind-the-meter projects in non-EDC territories to register in the Successor Program?

<u>Competitive solicitation model for all grid supply projects and large net metered projects</u>

11. Staff proposes to divide the competitive solicitation into four tranches to allow like projects to compete against like projects. The four tranches are designed to enable the Board to set policy preferences through the design and project requirements of the tranches, thereby enabling cost to be the single deciding factor in awarding bids in each tranche.

    a. Please comment on the overall approach of using a cost-based bid determination within the four described tranches, rather than a single solicitation with a Staff-led scoring process, such as is currently used for the Community Solar Energy Pilot Program. What

eligibility or other solicitation criteria could be established to enable competitive bids from a diversity of project types and market segments with divergent cost structures?

b. Please comment on the four proposed tranches: basic (i.e., open space) grid supply; desired land use (e.g., contaminated land, built environment); solar + storage; and net metered projects greater than 2 MW. Is this the optimal configuration for the competitive solicitation? Would you suggest any changes?

12. Staff proposes to hold an annual competitive solicitation. Please comment on this proposed schedule. Specifically:

    a. Would you advise running the solicitations more or less often, and if so, why?

    b. Can all four tranches be administered on the same schedule, or should one or more be run more or less often than the others?

    c. Should the program vary the solicitation frequency schedule based on liquidity in any given tranche? For example, if a given tranche fails to attract sufficient bids in one period, should the program provide extra time before holding the next procurement in that market segment?

    d. Staff is particularly interested in determining if the net metered tranche should run more often than the grid supply tranches, and if so, why.

13. In the interest of procuring the maximum amount of solar energy and the lowest possible price, Staff requests feedback on whether projects awarded within the competitive solicitation should be paid-as-bid or receive a single clearing price.

14. Staff proposes that selected projects would receive a contract for REC off-take in a term of 15 years, due to the nature of heavily discounting outer-year incentives, as well for consistency with the administratively determined program. Please comment on this proposal and explain any alternative suggestions.

15. Staff proposes that projects applying to the competitive solicitation must post a deposit equal to $40/kW of DC nameplate capacity of the solar facility in an escrow account. Projects proposed with energy storage would be required to place an additional deposit of $40/kW of nameplate capacity of energy storage offered. The escrow amount would be reimbursed to the applicant in full upon either (i) the project not being awarded a contract through the competitive solicitation, or (ii) upon attainment of PTO for the solar electric power generation facility. If a project is selected, the escrow will be forfeited to the State on a pro rata basis for any kW capacity that remains unbuilt after 2 years, plus any applicable extensions.

    a. Please comment on the proposed deposit fee(s) as they relate to the solar facility, whether it should be lower or higher, and why.

    b. Please comment on the proposed deposit fee(s) as they relate to the storage facility, whether it should be lower or higher, and why.

    c. The Straw Proposal seeks to ensure both strict project maturity requirements as well as general program accessibility. Please comment on whether the deposit should be

required upon initial application or upon acceptance of a bid. In the alternative, should the Board require a lower deposit for initial application, followed by the balance due upon award?

16. The Straw proposes to include a tranche restricted to hybrid systems (solar and energy storage) in the competitive solicitation. Staff seeks commentary on the following:

    a. The Straw proposes establishing a $/MWh incentive for hybrid systems would be administratively simpler than establishing separate contracts for the storage and solar components. Please comment on this approach.

    b. How should the competitive solicitation account for battery degradation? For example, should applicants be required to commit to minimum performance metrics in order to qualify for the solicitation? Should applicants be required to commit to maintaining their stated capabilities until the end of the term? What criteria and documentation should the program administrator require as evidence?

    c. Please address how the competitive solicitation should normalize bids associated with different MW and MWh capabilities. Should the Board require pricing based on specific battery sizes to enable clear bid comparisons, or should the Board allow flexibility?

    d. Please comment on the potential for allowing distributed storage developers to place offers that aggregate a pool of distributed resources into a single "virtual power plant" bid that can participate in the grid supply paired with an energy storage tranche. Please address whether this is technically feasible for implementation in the first round of auctions or whether it should be deferred for possible consideration in future development cycles.

<u>New programs and technologies</u>

17. For solar projects proposed on farmland that allow for continued farming on the same parcel, known as "agrivoltaics" or "dual-use programs," is it likely that there is a market for dual-use projects smaller than 2 MW, or should Staff presume that all dual-use projects would be larger and enter the competitive solicitation?

18. If dual-use projects are permitted into the competitive solicitation in future years, should they be permitted as a fifth tranche or into the basic grid supply tranche with an adder? If with an adder, how should the Board determine the adder?

19. Should additional siting restrictions be established for dual-use projects, for example, by limiting dual-use projects only to farms that meet certain soil characteristics or that are used for a certain type of herding, grazing, or crop type?

20. What rules and regulations should be established to ensure either no loss, or a reasonable loss, of agricultural productivity for dual-use projects? What should be considered a "reasonable loss" of agricultural productivity?

21. Are there additional solar technologies or use cases for which this Successor Straw has not yet considered that may be considered for the Successor Program, either now or in the future? Please explain.

Solar Siting

22. Please comment on Staff's proposed methodology for (a) limiting solar development on the areas specified on page 20 and (b) establishing a path forward for projects seeking to be developed on desired land uses that fall within otherwise prohibited siting areas.

23. Has Staff overlooked any siting categories for which solar development should be either expressly prohibited or otherwise limited as described in the Successor Straw and noted in the question above?

24. Has Staff overlooked any siting categories for which solar development should be considered a desired land use?

25. How should Staff consider relatively new land uses for solar development, such as floating solar, former mines, and quarries? Others?

26. Please comment on a proposed methodology for qualifying "contaminated lands." Please cite objective federal or state standards.

Section IV: Megawatt Targets

27. Should the annual capacity targets for the administratively set program be set broadly for the whole program, or should the administratively set program be further sub-divided into market segments with individual cost caps? In other words, should the Board set cost caps for the residential sector, net metered commercial rooftop, net metered commercial ground-mount, etc., or simply allocate a certain amount of money to the whole net metered program? Staff notes that the community solar segment will have its own cost cap.

28. Should the annual capacity targets for the competitive solicitation tranches be set with flexible parameters, such that the Board may accept more or fewer projects into any particular tranche based on viable project applications and pricing, as long as the total projects accepted into the competitive solicitation don't exceed the overall annual budget cap?

29. Please comment on Staff's proposed megawatt targets for the first year (EY 2022) (see page 22).

Section V: Cost Cap Calculation

30. Staff proposes to include the total amount of expenditures by electricity customers on annual retail bills and the costs associated with all net metered and other solar projects – whether host-owned or third-party owned – when calculating the denominator of the cost cap, as to accurately

reflect the total amount of money paid by New Jersey customers for electricity (see details beginning on page 24 for details).

a. Do you agree with Staff's proposed categories for inclusion? Should any category be omitted? Has Staff overlooked a category that should be included?

b. Please comment on the sources of information, calculations, and assumptions underlying the categories.

31. Please consider the benefits and consequences of using the moving three-year average of annual electricity demand versus annual amounts in calculating and forecasting the annual cost cap percentage.

32. For the purposes of forecasting future electric costs to estimate the cost cap in later years, Staff proposes using a 0.5% growth factor based on consumption patterns, presumptive expenditures for future and continued clean energy incentives, such as energy efficiency programs, ORECs, and ZECs, as well as increased demand due to vehicle electrification in particular, and cost declines due to increasing energy efficiency. Please comment on Staff's assumptions.

33. Staff proposes to include the following elements in calculating the numerator of the cost cap to reflect the cost of incentives paid by ratepayers: the annual costs of SRECs, TRECs, and Class I RECs, minus the DRIPE benefits of solar (see section beginning on page 29 for details).

c. Do you agree with Staff's proposed categories for inclusion? Should any category be omitted? Has Staff overlooked a category that should be included?

d. Please comment on the calculations and assumptions underlying each of the components of the cost cap.

e. How should the Board consider the assumed annual value of SRECs, which is not fixed?

Section VI: Implementing the Successor Program and Transitioning from the Transition Incentive Program

34. Please comment on the Staff proposal that, following the close of this stakeholder process, the Board will issue an Order directing Staff to close the Transition Incentive Program within 30 days. After that 30-day period, the administratively set program will open immediately. The competitive solicitation is targeted to commence in the second half of 2021. Staff notes that there will be a seamless transition for residential, community solar, and net metered projects at 2 MW or less, but there will likely be a gap between the end of the TI Program and the start of the competitive solicitation that will affect large net metered and grid supply projects.

Ensuring State Policy Priorities

35. Should "adders" or "subtractors" be used to further differentiate incentives by project attributes in both the administratively set incentive program and the competitive solicitation, only one program, or neither? Explain why.

36. Would adders make the administratively set incentive program too complex when coupled with the anticipated differentiation envisioned for residential, non-residential roof, non-residential ground, community solar LMI, and community solar non-LMI? How could they be used most effectively?

37. Should the administratively set incentive program include an adder for projects that benefit environmental justice communities? For the competitive solicitation? If so, should there be criteria to select the projects with the highest benefits? How can "benefits" for these communities be quantified?

38. How else could the Board consider designing the program to encourage broader participation among traditionally underrepresented groups?

Section VII: Community Solar Permanent Program

39. Please comment generally on whether the Board should consider maintaining the competitive solicitation for community solar projects in the Permanent Program, or if it should adopt strict qualifications and otherwise establish a first-come, first-served model (detailed as Option 1 and Option 2 on pages 40-41).

40. Please comment on the Pilot Program rules (detailed beginning on page 41) and discuss which, if any, the Board should consider modifying for the Permanent Program, and why.

41. Currently, community solar projects must be sited in a single location and are not permitted to include aggregated rooftops.

    a. Should the Board consider revising this policy to allow aggregation of rooftop projects, up to the 5 MW capacity limit? Please comment on this general policy, and if you agree, what kind of limitations should the Board set with respect to the proximity of the rooftops, site control or ownership, etc.

    b. What should the Board consider with respect to the competing value of rooftop space, particularly on multi-unit residential and small commercial buildings, in locating HVAC or other equipment necessary for future energy efficiency and building decarbonization measures?

Bonus Question

42. Staff is seeking feedback on its proposal to call the Successor Renewable Energy Certificate a "UREC" to differentiate it from the Solar Renewable Energy Certificate (SREC) and the Transition Renewable Energy Certificate (TREC). In the alternative, please provide additional acronyms or program names for consideration.

Appendix A: ITC-Amended SAM Simulations provided by Cadmus (February 2021)

CADMUS

Memorandum

To: Ariane Benrey; New Jersey Board of Public Utilities (BPU)

From: Chad Laurent and Steve Tobey; Cadmus

Subject: Project-Level SAM Simulations

Date: February 26, 2021

Cadmus is providing consulting services to the BPU for the Assessment and Recommendation for Redesign of Solar Renewable Energy Certificate Program—reference Purchase Order (PO) #8707431. At the BPU's request, Cadmus has performed additional simulations as part of its project-level modeling (using NREL's System Advisory Model) to reflect the extended ITC level of 26%.

Following are assumptions for the modeling:

- The modeled year was 2021.
- The investment tax credit (ITC) was increased to 26% to reflect the Consolidated Appropriations Act, 2021. All other inputs remained the same, i.e., taken from the Draft Capstone process before updating from stakeholder feedback and other changes.
- The following 12 SAM Cases were modeled at BPU's request:
    - Comm_DO_Ground_med
    - Comm_DO_Roof_med
    - Comm_DO_Roof_sm
    - Comm_TPO_Carport
    - Comm_TPO_Ground_med
    - Comm_TPO_Roof_med
    - Comm_TPO_Roof_sm
    - Resi_DO_Roof
    - Resi_TPO_Roof
    - CS_Ground
    - CS_Roof_lg
    - CS_Roof_med

55 Broadway, 4th Floor, Suite #412, New York, NY 10006 Tel 646.762.3970
HEADQUARTERS 100 5th Avenue, Suite 100, Waltham, MA 02451 Tel 617.673.7000 Fax 617.673.7001
cadmusgroup.com

Table 1 below shows estimated performance-based incentives (PBIs) for the Base Scenario in Model Year 2021, as well as the PBIs from the Final Capstone's Base and Sensitivity Scenarios. As shown, PBIs typically decreased $5-15/MWh with the increase in ITC.

Table 1: SAM Case PBIs

Modeled Year 2021; PBIs ($/MWh)	Base Scenario			
SAM Cases	From Final Capstone	With 26% ITC	Reduction	Sensitivity Scenario
Comm_DO_Ground_med	$ 90	$ 80	$ (10)	$ 155
Comm_DO_Roof_med	$ 85	$ 70	$ (15)	$ 140
Comm_DO_Roof_sm	$ 105	$ 95	$ (10)	$ 165
Comm_TPO_Carport	$ 180	$ 170	$ (10)	$ 220
Comm_TPO_Ground_med	$ 140	$ 135	$ (5)	$ 170
Comm_TPO_Roof_med	$ 140	$ 130	$ (10)	$ 165
Comm_TPO_Roof_sm	$ 155	$ 150	$ (5)	$ 180
Resi_DO_Roof	$ 95	$ 75	$ (20)	$ 210
Resi_TPO_Roof	$ 95	$ 80	$ (15)	$ 100
CS_Ground	$ 55	$ 50	$ (5)	$ 90
CS_Roof_lg	$ 60	$ 50	$ (10)	$ 90
CS_Roof_med	$ 100	$ 90	$ (10)	$ 130

Please let us know if you have any questions.

Appendix B: Cost Cap Tool

The Cost Cap Tool is available as an unlocked Excel spreadsheet at the following link: https://njcleanenergy.com/files/file/Solar%20Transition/Cost%20Cap%20Tool_for%20public%20discussion_04-07-2021.xlsx.

SOLAR TRANSITION: COST CAP TOOL

DRAFT FOR STAKEHOLDER DISCUSSION

7-Apr-21

The Solar Transition: Cost Cap Tool is a working document that is being provided for informational purposes only to support discussions with stakeholders in the context of the **Solar Successor Program: Staff Straw Proposal**. Many of the assumptions used in this Cost Cap Tool are placeholders, and are intended to be updated based on stakeholder feedback and data availability. **Do not use this spreadsheet for guidance on the Board's policy or Staff forecasts for program performance.**

Footnotes from Cost Cap Tool:	
1	Staff estimates, except when actual retirement data is available. Net out TREC, SREC and OREC from total RPS obligation when applicable. Assume cost of out-of-state Class I REC on open market is
2	Staff estimates.
3	Solar production based on annual 1,154 MWh/MW installed.
4	Energy DRIPE: Using $0.0000095 per MWh for all MWh sold in NJ per each MW solar capacity installed. See references in Straw Proposal.
5	Capcacity DRIPE from JCPL EE filing $0.000833/MWh, and multiply by 0.42 for conversion from ICAP to UCAP.

Solar Transition: Cost Cap Tool

Draft for Stakeholder Discussion 04-07-2021

Green cells are input variables that can be changed to affect scenario outputs (cap space and head room)

Indicates actual data for EY19 and EY20 (later years are estimates)

Precursor variables to get to dollar benefits

Sub-table 1. Numerator Inputs

<---------- C O S T S (Sub-table 1a) ---------->

Energy Year	SREC: As a % of Solar ACP:	SREC: 75%	SREC: SREC Retirements[1]	SREC: Cumulative Legacy SREC Cost	TREC[2]	Non-solar Class I RECs[3]	Total Class I RPS Costs
	SACP ($/MWh)	($/MWh)	(MWh)	($)	Cost of Cumulative Capacity ($)	Value of Retired RECs ($)	(w/out Successor REC) ($)
2019	268	217.29	2,747,676	597,042,518	-	79,254,419	676,296,937
2020	258	218.61	3,287,339	718,645,179	350,518	89,997,891	808,993,588
2021	248	186.00	3,823,650	711,198,900	18,666,286	121,089,600	850,954,786
2022	238	178.50	4,036,075	720,439,388	65,697,307	117,499,242	903,635,937
2023	228	171.00	3,868,305	661,480,155	110,784,889	137,534,564	909,799,608
2024	218	163.50	3,650,500	596,856,750	124,757,380	200,636,306	922,250,436
2025	208	156.00	3,550,149	553,823,244	124,757,380	248,123,210	926,703,834
2026	198	148.50	3,163,899	469,839,002	124,757,380	240,856,863	835,453,244
2027	188	141.00	2,615,424	368,774,794	124,757,380	219,753,682	713,285,846
2028	178	133.50	1,920,845	256,432,808	124,757,380	200,558,255	581,748,443
2029	168	126.00	1,387,136	174,779,136	124,757,380	179,279,964	478,816,480
2030	158	118.50	1,068,680	126,638,580	124,757,380	304,161,913	555,557,873
2031	148	111.00	768,680	85,323,480	124,757,380	282,591,466	492,672,326
2032	138	103.50	468,680	48,508,380	124,757,380	261,033,265	434,299,025
2033	128	96.00	168,680	16,193,280	124,757,380	239,487,372	380,438,032
2034	118	88.50	50,000	4,425,000	124,757,380	215,596,687	344,779,067
2035				-	124,406,862	190,825,594	315,232,456
2036				-	106,091,094	193,336,704	299,427,798
2037				-	59,060,073	195,860,370	254,920,443
2038				-	13,972,491	198,396,653	212,369,144
2039				-	-	200,945,619	200,945,619
2040				-	-	203,507,329	203,507,329

<---------- B E N E F I T S (Sub-table 1b) ---------->

Energy Year	SREC Solar: Cum. Installed as of Nov 30 of each EY (MW)	TREC Solar: Cumulative Installed (MW)	Cum. SREC and TREC Installed (MW)	Solar production[3] (MWh)	Total Class I REC (solar and non-solar): RPS obligation (MWh)	NJ Electricity Sales (MWh)	Energy DRIPE[4] 0.0000095 ($)	Capacity DRIPE[5] 0.000833 ($)
2019	2,883		2,883	3,326,982	10,408,717	74,462,963	2,039,429	75,106,798
2020	3,317	21	3,338	3,852,052	10,078,927	71,695,423	2,273,534	83,728,258
2021	3,333	269	3,602	4,156,708	15,131,319	72,053,900	2,465,612	90,802,017
2022	3,333	609	3,942	4,549,068	15,206,976	72,414,170	2,711,838	99,869,866
2023	3,333	805	4,138	4,775,252	15,283,010	72,776,240	2,860,907	105,359,668
2024	3,333	817	4,150	4,789,100	15,359,426	73,140,122	2,883,549	106,193,532
2025	3,333	817	4,150	4,789,100	25,727,038	73,505,822	2,897,967	106,724,500
2026	3,333	817	4,150	4,789,100	25,855,673	73,873,351	2,912,457	107,258,122
2027	3,333	817	4,150	4,789,100	25,984,951	74,242,718	2,927,019	107,794,413
2028	3,333	817	4,150	4,789,100	26,114,876	74,613,932	2,941,654	108,333,385
2029	3,333	817	4,150	4,789,100	26,245,450	74,987,001	2,956,363	108,875,052
2030	3,333	817	4,150	4,789,100	37,680,968	75,361,936	2,971,144	109,419,427
2031	3,333	817	4,150	4,789,100	37,869,373	75,738,746	2,986,000	109,966,524
2032	3,333	817	4,150	4,789,100	38,058,720	76,117,440	3,000,930	110,516,357
2033	3,333	817	4,150	4,789,100	38,249,014	76,498,027	3,015,935	111,068,939
2034	3,333	817	4,150	4,789,100	38,440,259	76,880,517	3,031,014	111,624,284
2035	3,333	817	4,150	4,789,100	38,632,460	77,264,920	3,046,169	112,182,405
2036	3,333	817	4,150	4,789,100	38,825,622	77,651,244	3,061,400	112,743,317
2037	3,333	817	4,150	4,789,100	39,019,750	78,039,501	3,076,707	113,307,034
2038	3,333	817	4,150	4,789,100	39,214,849	78,429,698	3,092,091	113,873,569
2039	3,333	817	4,150	4,789,100	39,410,923	78,821,847	3,107,551	114,442,937
2040	3,333	817	4,150	4,789,100	39,607,978	79,215,956	3,123,089	115,015,151

After 2024 hold Class I REC price ($/MWh) at: 13

Sub-table 2a. Denominator Inputs

Energy Year	Revenue from Sales: 3-year moving avg (actual from EIA)	Projected Total Paid ($): 0.5%	Projected Total Paid ($): Plus adjustments adjustments to denominator (sub-table 2b) ($)
2019	10,010,000,000	10,010,000,000	10,084,800,000
2020	9,837,000,000	9,837,000,000	9,919,600,000
2021		9,886,185,000	9,964,885,000
2022		9,935,615,925	10,016,055,925
2023		9,985,294,005	10,075,174,005
2024		10,035,220,475	10,192,532,225
2025		10,085,396,577	10,310,140,077
2026		10,135,823,560	10,426,098,810
2027		10,186,502,678	10,600,477,678
2028		10,237,435,191	10,772,797,941
2029		10,288,622,367	10,942,278,867
2030		10,340,065,479	11,102,445,479
2031		10,391,765,806	11,276,669,306
2032		10,443,724,635	11,451,651,635
2033		10,495,943,258	11,626,893,758
2034		10,548,422,975	11,802,296,975
2035		10,601,165,090	11,977,162,590
2036		10,654,170,915	12,039,308,415
2037		10,707,441,770	12,108,219,270
2038		10,760,978,979	12,177,396,479
2039		10,814,783,873	12,246,841,373
2040		10,868,857,793	12,316,555,293

Sub-table 2b. Adjustments to Denominator

Energy Year	Cum. BTM host-owned SREC* MW	Cum. BTM host-owned TREC Program* MW	Cum. BTM host-owned Successor Program** MW	BTM host-owned cumulative MW	Cost of BTM host-owned cumulative $ Paid	OREC: MW	OREC: MWh	OREC: $ Paid
2019	747	1	0	748	74,800,000	0	-	-
2020	817	9	0	826	82,600,000	0	-	-
2021	712	75	0	787	78,700,000	0	-	-
2022	573	75	156.4	804.4	80,440,000	0	-	-
2023	511	75	312.8	898.8	89,880,000	0	-	-
2024	492	75	469.2	1036.2	103,620,000	350	1,073,835	53,691,750
2025	473	75	625.6	1173.6	117,360,000	700	2,147,670	107,383,500
2026	435	75	782	1292	129,200,000	1050	3,221,505	161,075,250
2027	365	75	938.4	1378.4	137,840,000	1800	5,522,580	276,129,000
2028	272	75	1094.8	1441.8	144,180,000	2550	7,823,655	391,182,750
2029	148	75	1251.2	1474.2	147,420,000	3300	10,124,730	506,236,500
2030	5	75	1407.6	1487.6	148,760,000	4000	12,272,400	613,620,000
2031	0	75	1564	1639	163,900,000	4700	14,420,070	721,003,500
2032	0	75	1720.4	1795.4	179,540,000	5400	16,567,740	828,387,000
2033	0	75	1876.8	1951.8	195,180,000	6100	18,715,410	935,770,500
2034	0	74	2033.2	2107.2	210,720,000	6800	20,863,080	1,043,154,000
2035	0	65	2189.6	2254.6	225,460,000	7500	23,010,750	1,150,537,500
2036	0	0	2346	2346	234,600,000	7500	23,010,750	1,150,537,500
2037	0	0	2502.4	2502.4	250,240,000	7500	23,010,750	1,150,537,500
2038	0	0	2658.8	2658.8	265,880,000	7500	23,010,750	1,150,537,500
2039	0	0	2815.2	2815.2	281,520,000	7500	23,010,750	1,150,537,500
2040	0	0	2971.6	2971.6	297,160,000	7500	23,010,750	1,150,537,500

Sub-table 3. Calculate Cost Cap Space

Energy Year	Cost Cap Percent (percent of denominator)	Cap Space ($): denominator (cap% times column G)
2019	9%	907,632,000
2020	9%	892,764,000
2021	9%	896,839,650
2022	7%	701,123,915
2023	7%	705,262,180
2024	7%	713,477,256
2025	7%	721,709,805
2026	7%	729,826,917
2027	7%	742,033,017
2028	7%	754,095,856
2029	7%	765,959,521
2030	7%	777,171,184
2031	7%	789,366,851
2032	7%	801,615,614
2033	7%	813,882,563
2034	7%	826,160,788
2035	7%	838,401,381
2036	7%	842,751,589
2037	7%	847,575,349
2038	7%	852,417,753
2039	7%	857,278,896
2040	7%	862,158,870

Sub-table 4. Calculate Annual Head Room

Cap space (sub-table 3) - costs (sub-table 1a) + benefits (sub-table 1b)

Energy Year	Annual Head Room	Annual Head Room with carry over
2019	$ 308,481,290	$ 308,481,290
2020	$ 169,772,204	$ 478,253,494
2021	$ 139,152,493	$ 617,405,987
2022	$ (99,930,318)	$ 517,475,669
2023	$ (96,316,853)	$ 421,158,816
2024	$ (99,696,099)	$ 321,462,718
2025	$ (95,371,562)	$ 226,091,156
2026	$ 729,826,917	$ 230,635,408
2027	$ 139,468,604	$ 370,104,012
2028	$ 283,622,452	$ 653,726,464
2029	$ 398,974,455	$ 1,052,700,919
2030	$ 334,003,883	$ 1,386,704,802
2031	$ 409,647,050	$ 1,796,351,852
2032	$ 480,833,877	$ 2,277,185,729
2033	$ 547,529,405	$ 2,824,715,134
2034	$ 596,037,019	$ 3,420,752,153
2035	$ 638,397,499	$ 4,059,149,652
2036	$ 659,128,508	$ 4,718,278,161
2037	$ 709,038,647	$ 5,427,316,808
2038	$ 757,014,269	$ 6,184,331,076
2039	$ 773,883,766	$ 6,958,214,842
2040	$ 776,789,782	$ 7,735,004,624

*BTM host-owned SREC and TREC are actuals only as of Jan. 2021, do not include capacity forecasted to come online in EY21 and EY22

**BTM host-owned Successor Program assumes that 46% of NM installed systems are host-owned

Assume 10-year financing period for host-owned (e.g. EY 2019 BTM includes projects installed between June 2009 and May 2019); Assume paid amount of $100,000/yr per MW installed.

Assume Net OREC is $50/MWh and $50 MW coming on line anually in EY2025-2027 and 750 MW/yr 2028-2030; Capacity factor for OSW = 0.35

Capacity Factor: 1,154

After 2024 hold Class I REC price ($/MWh) at: $13

Sub-table 5a. Successor Program Incentive Value

Energy Year	Incentive Value Reduction (every 3 years)	Basic grid supply @$40/MWh (MW)	Prefered land use grid supply @$80/MWh (MW)	Community Solar (LMI) @$90/MWh (MW)	Net-metered ≤ 2 MW @$85/MWh (MW)	Non-residential >2 MW @$80/MWh (MW)
2019		0	0	0	0	0
2020		0	0	0	0	0
2021		0	0	0	0	0
2022	1	$ 40.00	$ 80.00	$ 90.00	$ 85.00	$ 80.00
2023	1	$ 40.00	$ 80.00	$ 90.00	$ 85.00	$ 80.00
2024	1	$ 40.00	$ 80.00	$ 90.00	$ 85.00	$ 80.00
2025	0.9	$ 36.00	$ 72.00	$ 81.00	$ 76.50	$ 72.00
2026	1	$ 36.00	$ 72.00	$ 81.00	$ 76.50	$ 72.00
2027	1	$ 36.00	$ 72.00	$ 81.00	$ 76.50	$ 72.00
2028	0.9	$ 32.40	$ 64.80	$ 72.90	$ 68.85	$ 64.80
2029	1	$ 32.40	$ 64.80	$ 72.90	$ 68.85	$ 64.80
2030	1	$ 32.40	$ 64.80	$ 72.90	$ 68.85	$ 64.80
2031	0.9	$ 29.16	$ 58.32	$ 65.61	$ 61.97	$ 58.32
2032	1	$ 29.16	$ 58.32	$ 65.61	$ 61.97	$ 58.32
2033	1	$ 29.16	$ 58.32	$ 65.61	$ 61.97	$ 58.32
2034	0.9	$ 26.24	$ 52.49	$ 59.05	$ 55.77	$ 52.49
2035	1	$ 26.24	$ 52.49	$ 59.05	$ 55.77	$ 52.49
2036	1	$ 26.24	$ 52.49	$ 59.05	$ 55.77	$ 52.49
2037	0.9	$ 23.62	$ 47.24	$ 53.14	$ 50.19	$ 47.24
2038	1	$ 23.62	$ 47.24	$ 53.14	$ 50.19	$ 47.24
2039	1	$ 23.62	$ 47.24	$ 53.14	$ 50.19	$ 47.24
2040	0.9	$ 21.26	$ 42.52	$ 47.83	$ 45.17	$ 42.52

Sub-table 5b. Successor Program Annual MW Targets

Energy Year	Basic grid supply	Prefered land use grid supply	Community Solar (LMI)	Net-metered ≤ 2 MW	Non-residential >2 MW
2019	0	0	0	0	0
2020	0	0	0	0	0
2021	0	0	0	0	0
2022	130	130	150	300	40
2023	130	130	150	300	40
2024	130	130	150	300	40
2025	130	130	150	300	40
2026	130	130	150	300	40
2027	130	130	150	300	40
2028	130	130	150	300	40
2029	130	130	150	300	40
2030	130	130	150	300	40
2031	130	130	150	300	40
2032	130	130	150	300	40
2033	130	130	150	300	40
2034	130	130	150	300	40
2035	130	130	150	300	40
2036	130	130	150	300	40
2037	130	130	150	300	40
2038	130	130	150	300	40
2039	130	130	150	300	40
2040	130	130	150	300	40

Sub-table 5c. Successor Program Cost

Energy Year	Cum. Successor Program Capacity (MW)	Total Cost Successor Program ($)	Energy DRIPE benefit of new build ($)	Capacity DRIPE benefit of new build ($)	Benefit from reducing Class I REC obligation ($)	Total Cost of Successor Program (minus benefits) ($)	Annual Surplus or Deficit ($)	Surplus or Deficit with Carryover ($)
2019	-						$ 308,481,290	$ 308,481,290
2020	-	-	-	-	-	-	$ 169,772,204	$ 478,253,494
2021	-	-	-	-	-	-	$ 139,152,493	$ 617,405,987
2022	750	-	-	-	-	-	$ (99,930,318)	$ 517,475,669
2023	1,500	66,701,200	518,531	19,027,348.07	10,386,000	36,769,321	$ (133,086,174)	$ 384,389,495
2024	2,250	133,402,400	1,042,247	38,244,969.62	22,503,000	71,612,184	$ (171,308,282)	$ 213,081,213
2025	3,000	200,103,600	1,571,187	57,654,291.70	33,754,500	107,123,621	$ (202,495,183)	$ 10,586,030
2026	3,750	260,134,680	2,105,391	77,256,750.88	45,006,000	135,766,539	$ (131,222,287)	$ (120,636,257)
2027	4,500	320,165,760	2,644,897	97,053,793.29	56,257,500	164,209,570	$ (24,740,966)	$ (145,377,223)
2028	5,250	380,196,840	3,189,746	117,046,874.71	67,509,000	192,451,220	$ 91,171,233	$ (54,205,990)
2029	6,000	434,224,812	3,739,977	137,237,460.60	78,760,500	214,486,875	$ 184,487,580	$ 130,281,590
2030	6,750	488,252,784	4,295,630	157,627,026.17	90,012,000	236,318,127	$ 97,685,755	$ 227,967,345
2031	7,500	542,280,756	4,856,747	178,217,056.47	101,263,500	257,943,452	$ 151,703,598	$ 379,670,943
2032	8,250	590,905,931	5,423,368	199,009,046.39	112,515,000	273,958,517	$ 206,875,360	$ 586,546,303
2033	9,000	639,531,106	5,995,533	220,004,500.78	123,766,500	289,764,572	$ 257,764,833	$ 844,311,136
2034	9,750	688,156,280	6,573,284	241,204,934.49	135,018,000	305,360,062	$ 290,676,957	$ 1,134,988,093
2035	10,500	731,918,938	7,156,663	262,611,872.43	146,269,500	315,880,902	$ 322,516,597	$ 1,457,504,691
2036	11,250	775,681,595	7,745,712	284,226,849.62	157,521,000	326,188,034	$ 332,940,474	$ 1,790,445,165
2037	12,000	819,444,252	8,340,472	306,051,411.29	168,772,500	336,279,869	$ 372,758,778	$ 2,163,203,943
2038	12,750	858,830,644	8,940,986	328,087,112.90	180,024,000	341,778,545	$ 415,235,723	$ 2,578,439,666
2039	13,500	898,217,036	9,547,296	350,335,520.24	191,275,500	347,058,719	$ 426,825,046	$ 3,005,264,713
2040	14,250	937,603,427	10,159,446	372,798,209.48	202,527,000	352,118,771	$ 424,671,011	$ 3,429,935,724

*Successor Program production counted in first full energy year after installation.