Via Regular Mail and Posted to Public Document Search

Honorable Aida Camacho-Welch
Secretary of the Board
44 South Clinton Avenue
1st Floor Post Office Box 350
Trenton, NJ 08625-0350

Re: IN THE MATTER OF COMPETITIVE SOLAR INCENTIVE ("CSI") PROGRAM (Docket No. QO21101186), NOTICE FOR INPUT

Joint Comments of PVOne; EDF Renewables; Reneu Energy; Parasol Structures

December 14th, 2021

Dear Secretary Camacho-Welch:

Please find enclosed the joint comments in the above referenced matter from PVOne, LLC, a New Jersey based solar development company, EDF Renewables, a North American renewable energy company with offices in Princeton, Reneu Energy, and Parasol Structures. As instructed, we are also posting our comments on the Board's Public Document Search tool.

The Competitive Solar Incentive ("CSI") Program was created under the Solar Act of 2021 and the Board's July 28, 2021 Order. The CSI program applies to projects that sell power into the wholesale market (hereafter, "grid supply solar projects"), as well as net metered non-residential projects above 5 MW in size. The CSI program may arguably be the most significant part of the Successor Solar Incentive Program ("Successor" or "SuSI" Program) for NJ to meet its solar installation goals. PVOne is submitting these comments in response to the Board's Notice issued on November 1, 2021, which asked for stakeholders to provide their input on topics concerning the CSI program contained in six (6) questions.

PVOne has been operating in the NJ market since the onset of its Solar Program. PVOne, along with its partner EDF Renewable Energy, recently completed one of the largest Subsection (t) projects to date in NJ. The 27 MW solar facility was installed at the former Ciba-Geigy Corp superfund site in Toms River, now owned by BASF Corporation. This project was likely one of the most complex grid projects completed in the State being that it is both a Superfund site and located within the CAFRA zone. We hope to provide the Board with insights into the development of these types of projects and the events that must occur to properly de-risk these complex grid scale projects. As you will see in our comments, we are deeply concerned that the CSI program may be structured in a way that will be counter-productive to the grid supply solar project market. We hope the Board will thoughtfully consider our comments and will ultimately develop a CSI program aligned with its solar installation goals in a manner that benefits all stakeholders.

A. EXECUTIVE SUMMARY:

As stated in our introduction, we look forward to offering Staff and the Board insight into project development from real life experience over the past decade, how projects achieve different and necessary financing stages, and what "de-risk" events must occur prior to a successive stage of development financing. By "de-risk" we mean events that must occur in order for more capital to be deployed into further project development.

We do however wish to reinforce the comments of many others throughout this process, who have indicated that they do not believe that a CSI Program design is the best approach to result in the balance between achieving the MW goals of the Administration and delivering the best use of ratepayer funds.

We too understand and support the need to ensure that the best interests of ratepayers are kept at the forefront of each program decision – including the program for grid supply solar projects. We understand the perceived attraction of a program that uses competitive solicitation to find the most cost competitive projects to continually drive the market to further cost savings. However, a program that creates levels of uncertainty for investors will naturally require higher levels of return to justify the risks that uncertainty creates.

And to emphasize, we believe that this type of program will likely:

- Place undo uncertainty into project development and create the inverse and unwanted effects of driving costs up (to cover risk), and
- Throttle down project development as a whole due to the higher-risk threshold.

We believe that a CSI style program is best suited for very large (over 100MW) utility scale projects, usually achieved in a one-off RFP style process as witnessed elsewhere in the country

B. PROJECT DEVELOPMENT:

We believe that it may be insightful or instructive to walk through a typical project development cycle from Site Identification through to Notice to Proceed. Notice to Proceed (NTP) is the point at which a project is "shovel ready", meaning that it has received all necessary approvals, permits and awards across three (3) categories: Land Use; Interconnection; and Regulatory Requirements for Incentives. When all of these have been successfully met, then a project is ready for construction.

The process to get to NTP for a typical 10MW project in New Jersey can take up to three years and cost over one million dollars ($1,000,000). What is important to understand is how and when those funds are committed to furthering project development. There are no developers who would blindly and irresponsibly spend $1,000,000 in project development without having known and limited risk parameters. This means that project development is broken down into stages, whereby – a financier will fund a stage until such time that the stage has been mostly de-risked before moving on to the next stage. The breakdown of this process is presented in the following section.

C. OVERVIEW OF THE DEVELOPMENT CYCLE: PROCESS, TIMELINE, AND CAPITAL (GENERIC 10MW NJ):

1. Site Identification
2. Fatal Flaw / Preliminary Site Assessment
3. Site Control (Lease or Purchase Option)
4. PJM Interconnection Application
5. Incentive Application to Regulatory Body
6. Project De-Risk Events (required to move forward)
    a. Approval of Incentive Application
    b. Viability of Interconnection
7. Design & Survey
    a. Civil Engineering
    b. Electrical Engineering (DC system array & AC Interconnect)
8. Permitting
    a. Federal
    b. State
    c. County
    d. Local
9. Approvals – NTP
10. Construction
11. Operations

D. CRITICAL FINANCIAL PROJECT DEVELOPMENT DECISION POINTS

Decision Point I:

Site Assessment / Control: **$40,000 / 3-6 months**

- Fatal Flaws Analysis
- Township exploratory meetings
- Site Control Agreement

If project passes the preliminary fatal flaw analysis, then the project will advance to the PJM application submission stage.

Decision Point II:

PJM Interconnection Agreement: **$115,000 / 24-30 months.**

- Must demonstrate Site Control
- Must submit Electrical Design
- Must pay application submittal fee

At the point of PJM application submission, a Developer will have invested approximately $150,000 in risk capital over four to six months. This is the point at which the Developer waits for two separate events to occur in order for the project to be de-risked:

1. Confirmation of Incentive Approval
2. Interconnection Viability

A project will not move forward without both of these de-risk events occurring – enabling investors to commit additional capital that is a key element to responsible development. This ensures keeping the average portfolio of projects costs down, which thereby delivers lower risk, lower cost projects to the rate payer.

We believe it is helpful for the Board and Staff to understand when considering what level of project maturity that will be required for a submittal to be deemed complete.

A developer will not finance a projects development past Site Control and PJM application submission, which is a $150,000 allocation of risk capital, until the project achieves key de-risk events: (1) Incentive Approval, and (2) Interconnection viability.

Once both Incentive Approval and Interconnection Viability are confirmed then a developer will invest further risk capital to take the project to the next stages of development.

E. ADDITIOJNAL STAGES TO ACHIEVE NTP

Site Plan Due Diligence and Survey: $250,000+. This process, at a minimum, will involve the tasks set forth below and will require 4-6 months to complete at an average cost of $250,000. To be clear, this is only one part of the effort required to submit a Site Plan to a Township for Site Plan Approval. If wetlands exist or the project is located in a CAFRA or other enhanced protection zone, then these average costs could double.

- Civil Engineering of site:
  - Federal, State, County and Local codes / regulations
  - Environmental constraints
  - Flood Hazard Area
  - Geotech
  - Stormwater
  - Wetland Delineation
  - Threatened and Endangered species
  - Cultural
  - County Soils
  - Survey

Site Plan Preparation: $150,000. Once the due diligence items are completed, then the civil engineering firm can begin the 3–4-month process of creating a Site Plan for submission to the Township for review.

Site Plan Submittal to Township: $200,000+

The process of submitting a Site Plan for approval and receiving a Site Plan approval can be long and involve significant capital investment in additional to the capital required to prepare the Site Plan. At a minimum, the process involves three different professional disciplines (Engineering, Legal, and a Professional Planner) and usually at the request of the Township Boards requires further testimony from expert witnesses to testify on one or several topics (e.g., EMF, fire, sound, visibility, glare or other local concerns) at a cost that can exceed $10,000 per witness. Additionally, the developer must pay the Township an escrow fee that is applied towards the townships outside professionals who review the Site Plan. The Township relies on the same slate of professionals, thus escrow can exceed an additional $50,000.

It is important to note to the Board that Site Plan diligence, preparation, submittal, and resolution compliance is a 12–15-month process with a cost that can be in excess of $600,000. Hopefully, this illustrates the cost and risks involved in obtaining non-ministerial permits, and demonstrates that a developer will only proceed to Design/Survey/ Submittal and seek non-ministerial permits once they are assured that the project has been appropriately de-risked. **This means that the project has received confirmation of both Incentive certainty and Interconnect viability.**

F. SUMMARY OF CRITICAL CONSIDERATIONS FOR THE BOARD

It is our hope that the thorough overview of grid project development presented above will give the Board critical insights into the processes, time, costs, and decision making that comprise "project development." We share this insight to inform both the Project Maturity and Escrow conversation. In addition, we provide additional detailed narrative on key elements and project development at the close of our comments.

Project Maturity: Site Control and PJM Application

It is our belief, that if project maturity criteria exceed Site Control and a PJM Application, in order to seek a State incentive, then it will have severe negative consequences. It will destabilize the Project Development process, introduce higher risk, create higher costs to the rate payer, and decelerate development. All of which is counter to the intent of the program, which is hoping to achieve a growth rate of 4-5X over and above our current grid development rate.

Escrow: None

An Escrow requirement will only serve to further exacerbate the negative consequences discussed above. If the intended purpose of escrow is to ensure that ghost projects are discouraged, or to ensure that a developer has "skin in the game", the Board must take into account, as we have shown, that a developer would already have spent $150,000 "at risk" to gain site control and apply to PJM. That is a significant amount of risk capital that is only spent when a developer has serious intent, experience, and the ability to finance and execute projects of this nature. We firmly believe there is no value in piling on additional costs to the already substantial financial commitment.

Commercial Online Date: 48 Month

The COD requirement carries one of the highest risks to the developer because once a project has attained NTP status, greater than 50% of the projects' success with respect to making timelines is completely out of the control of the developer. The developer is hostage to non-commercial risks over which they have no authority or ability to control. As such, COD should be the one category of criteria that the Board should be able to exercise the most flexibility. For example, a 10MW project that has reached Substantial Completion and is now awaiting Interconnection will have invested over fifteen million dollars ($15,000,000) to advance the project to this stage but is still at the mercy of a regulated utility to engineer, procure and construct that Interconnection.

BPU Staff Questions

1. The Solar Act of 2021 stipulates that "[t]he development of grid supply solar should be directed toward marginal land and the built environment and away from open space, flood zones, and other areas especially vulnerable to climate change." Staff proposes to implement this requirement mainly through some form of incentive or segmented procurement targeting development on the built environment as well as on contaminated land or landfills. Staff is looking for input on the following questions:

    a. Do projects on contaminated land and/or landfills need special consideration when it comes to project maturity and Commercial Operation Date ("COD")? If so, why?

    Yes. Project Maturity should remain at current levels. The current Subsection (t) program for grid projects on Landfills, Brownfields and Areas of Historic Fill has been in operation since 2013 and has found the proper balance of Project Maturity criteria that is required to apply and be deemed complete for review. No further criteria are needed. Adding additional criteria will only serve to discourage development of these sites.

    b. What additional costs, if any, are associated with development on contaminated land and/or landfills?

    A traditional Subsection (t) project incurs higher costs across all development stages as it requires enhanced environmental engineering and compliance, enhanced civil engineering, permitting with additional agencies, increased construction costs for materials and methods, and higher operations and maintenance costs for monitoring and compliance.

    c. To the extent that the purpose is to avoid, as much as possible, the development of open space that might otherwise be available for other purposes, are there other siting options besides the built environment, contaminated land, and landfills that should be given preference?

    We support efforts to further penetrate the built environment and to honor agricultural lands in production for agriculture. With that said it may be helpful to look at the historical solar and non-solar siting data from the NJDEP. However, we would also like to stress in this section that solar carports have been completely left out of the conversation and we believe this is a mistake. Carports are plentiful in New Jersey and are classic "built environments" where solar can provide high value to customers by creating a weather-protected space and a perfect support for the "EV-fication" of NJ transportation infrastructure, at schools, government, or privately owned properties, and providing a great tool to reduce the heat island effect and utility bills"

When reviewing the New Jersey Department of Environmental Protection 2012 and 2017 Solar Siting Map and Analysis a few points rise to the top that should be taken into consideration, (copy of which is provided).

The NJDEP Solar Siting Analysis in its simplest form looked at all land classifications in NJ and then categorized them as either “Preferred” or “Not Preferred” with the respect to the location of solar. Preferred being in Urban Lands, and Not Preferred being forests, wetlands, and agriculture.

Preferred Lands = 1,355,375 Acres

- 98% of Preferred was in Urban Lands of which 75 percent was Residential.

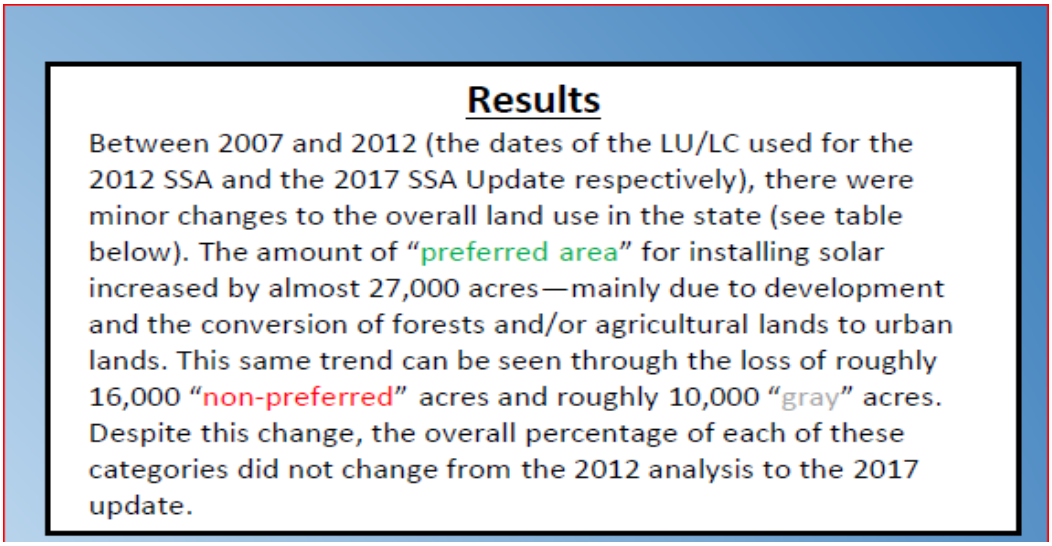
Not Preferred = 3,000,569 Acres

- 51% of Not Preferred was Forest, 32% Wetland, and 17% Agriculture with 497,670 acres being listed as Agriculture.

As these comments are specific to projects that will be of a scale of 5MW or more, and with Residential accounting for 75% of the Preferred Lands, (built environment), it is clear that seeking to steer projects in this segment towards the built environment, without carports, is not a viable option for a program seeking to stimulate 300MW/Year (approx. 1200 acres) of development, at the best economics for the ratepayer.

If we then accept that the built environment alone will not achieve the State’s goal, we must look to land currently classified as Not Preferred; Forest, Wetlands, Agricultural, and Barren. Forests and Wetland are not viable options, leaving Agricultural and Barren (497,670 and 3,884 acres respectively according to the NJ DEP 2017 solar siting analysis).

Of note, the 2017 Solar Siting Analysis Map Update included the following text box explaining the acreage delta between 2012 and 2017.



This explains that the new (non-solar) development activities like housing, office, and retail between 2012 and 2017 had consumed 27,000 acres of forest and agricultural lands.

It is worth noting that this was the same period that the Solar Act of 2012 disallowed incentives to projects on these lands due to concerns of many stakeholders that solar would overrun agricultural lands in NJ.

We now see that 27,000 acres were lost to destructive forms of development.

If only 50 percent, (13,000), of those same 27,000 acres that went to housing, office, retail, and impervious surfaces had been developed as solar, we would have been able to prevent the permanent loss of those lands and would have added 3.25 Gigawatts of renewable energy, which is more than two times the amount of solar that this section of the Program is seeking to develop. Solar on farmland does not permanently take the land out of development for other uses, including agriculture -- investors typically allow for removal of solar equipment and returning sites to their original form at the end of the solar contact term, typically 20-25 years.

We believe that it is important to understand that Solar and Agricultural lands can be symbiotic, can promote semi-permanent preservation, create an exponential return to the environment, the landowner, the farmer and the ratepayer, while preventing the loss of the lands to other permanently destructive forms of development, such as housing, commercial and retail business.

2. The Solar Act of 2021 stipulates that larger net metered non-residential projects (over 5 MW) may be eligible to participate in the CSI Program:
    a. Does net metered status provide a benefit that is likely to be reflected in lower-cost bids in response to a competitive SREC solicitation?

        We do not take a position on this question at this time.

    b. What kind of project maturity requirements would be appropriate for net metered projects?

        We do not take a position on this question at this time.

3. To maximize the competitiveness of the solicitation process, and also to capture additional potential benefits to the public, it is Staff's intention to propose a CSI Program design that facilitates public entities' participation:
    a. Are there special barriers public entities might face in participating in competitive SREC solicitations? If so, what are they? Are there ways NJBPU could help eliminate barriers?

        We do not take a position on this question at this time.

4. Staff aims to propose a solicitation design that results not only in awards, but in successful project development. To facilitate this, some combination of project pre-qualification requirements, COD requirements, participations fees, and/or escrow requirements are being considered:
    a. Should Staff consider recommending a requirement that projects have completed a Facilities Study?

        Our answer is an unequivocal No, given the soon to be implemented new PJM application process. PJM is currently reforming their Application process for timing and fees. The Fee structure will be significantly higher than the current structure. The current cost and time for a project to advance through to a completed Facilities Study is three years and over $100,000. The new PJM process will hopefully reduce the time to 24-30 months. However, the new process will increase the fees significantly such that a 10MW project might be required to pay up to an additional $300,000 in Readiness Deposits (1,2,3) prior to obtaining a completed Facilities Study.

        A project cannot invest that amount of risk capital unless that project has **confirmed incentive approval.**

b. What about having a requirement for a completed or draft System Impact Study?

No. Please refer to the above. It is important to note that the current PJM study milestones known as Feasibility Study, System Impact Study and Facilities Study will no longer exist in the new PJM Queue Interconnection regime. The new regime target date is scheduled to take effect October 2022. Therefore, the rules that are set in this proceeding should not reference milestones that will no longer exist or be named as such.

Board Staff should thoroughly review the planned PJM changes before making any decision on this issue or on the overall program for that matter.

https://www.pjm.com/-/media/committees-groups/task-forces/iprtf/2021/20211207/20211207-item-03a-transition-proposal.ashx

c. Are there other PJM queue position requirements that should be considered?

Given that the new PJM regime Application fee total (Study Fee & Readiness Deposit 1 fee) will exceed $115,000 for a 10MW project, we believe that proof of application is the appropriate requirement.

d. At what point in the process would an SREC-II award provide the most value in terms of preventing projects dropping out of the queue?

Before the Second Readiness Deposit becomes due. A project will require incentive certainty to justify further deployment of risk capital.

e. What would the impact of other project maturity evidence requirements be (e.g. site control, evidence of ROW control, evidence of community engagement)?

Additional requirements beyond those that we have already discussed would only serve to add risk, costs, and hamper development.

f. NYSERDA requires bid participation fees ranging from $5,000 to $100,000 depending on the size of the project. What is the right level for a 5 MW project versus a 20 MW project?

We do not believe that comparisons to the NYSERDA program are instructive as it is outside of the PJM RTO. As previously stated, the fees posted to PJM are significant enough on their own to achieve the “skin in the game” goals of the BPU. No additional Fees, Deposits, or Escrow should be required. Additional fees or costs will have an inverse effect on the desired outcome by increasing risk, increasing costs to the ratepayer, and dampening development

5. New Jersey's current practice is to provide subsidies such as SREC-IIs through administrative rules developed pursuant to statute, not through contracts. Staff requests input from developers about whether there are any implications on project cost, risk premium or other aspects of project financing purposes to providing incentives through administrative rules versus developing a standard contract.

   An incentive level, mechanism, or structure that is created by Board Order is always subject to the regulatory uncertainty of the next Board Order, as such a risk premium is to be expected. A Standard Contract would alleviate the risk premium that is applied to the regulatory uncertainty of a Board Order.

6. Staff invites stakeholder comments on how the qualifying life for receiving SREC-IIs impacts project financeability, total cost, and ratepayer risk.

   A 20-year qualifying life most closely matches that of the asset life and is the appropriate life

Additional Comments & Information

COD: Why should the COD date be pushed out to 48+ months?

The Board has expressed their frustration with projects seeking extensions that they deem as normal commercial risk. The extensions are typically granted; however, it is an active issue of contention with the Board, and it creates a regulatory uncertainty, which adds risk and costs.

It is true that most grid projects have in fact been able to meet the 24-month timelines, however new and unforeseen COD challenges are facing the grid scale development community. The prime driver of COD timeline delay is interconnection studies and interconnection construction.

Hopefully we have demonstrated that a project requires incentive certainty after the project submits an Application to PJM but **before 1) PJM requires additional Readiness Deposits 2 & 3 and; 2) before the Site Plan and permitting process can begin.** This is required to justify the continued deployment of risk capital into the project.

This means that the incentive COD clock begins while the project is in the PJM process and has approximately 12 months remaining, and before the 12-month Site Plan process has begun. As such the COD clock will likely have lost 18-24 months before a project reached NTP and can even begin construction.

The 24-month timeline was originated from the Solar Act of 2012. In 2012 a PJM Feasibility Study could be obtained inside of 6 months. Today the PJM Queue is being completely revised and changed, including time frames, as previously discussed. In 2012 PJM and the Transmission Owner (TO) would routinely allow an Interconnection Customer to move from a Feasibility Study straight to the WMPA and IA agreements. This process alone will now be 24-30 months.

Utility Interconnection Construction: With grid tied projects the utilities themselves engineer, procure, and construct it (EPC). They have the full responsibility to manage and construct the physical interconnection, and thus it is a process that is 100 percent controlled by the utilities. The IC applicant has no control of this crucial step. It is not uncommon for a Utility to state in their IA agreements that it will take 12 months, and then have 6-9 months of delays on top of that 12 months. This is not a typical Commercial Risk that a developer should or can be able to account for. We ask the Board to recognize that these are outsized risks beyond a developer's control, and not a form of typical commercial risks.

The 24-month timeline was a product of 2012, but we are now in 2021 and preparing for our journey to 2030, the Board must recognize that the landscape has changed, and that we will need to adjust criteria and timelines the same way we have adjusted the RPS to ensure that the criteria and timelines allow for the success in meeting the RPS. We cannot have a successful 2030 RPS if we are unwilling to embrace new timelines and criteria that will allow that success.

NJDEP 2017 SOLAR SITING ANALYSIS

2017 Solar Siting Analysis Update

Ryan Gergely
NJDEP Bureau of Energy and Sustainability

Introduction

In October 2012, shortly after the Solar Act was signed into legislation, the NJDEP's Bureau of Energy and Sustainability—then under the name Sustainability and Green Energy (SAGE)—developed the Solar Siting Analysis. The SSA document and supporting mapping application was developed to aid the Department, local communities, and potential developers in planning for solar installations by distinguishing between sites where the Department encourages solar development from those where the Department discourages solar development. As a clean energy source, solar has many environmental benefits associated with it that can unfortunately be lost if solar projects are not properly sited. The SSA document and supplemental mapping product is intended to be used as a guidance tool to evaluate proposed projects based on the land use type in the proposed location, and should not be used to automatically disqualify projects from consideration.

In March 2017, the Bureau of Energy and Sustainability set out to update the 2012 Solar Siting Analysis to reflect the changes that have taken place in the state, as well as changes in solar energy technology and markets during this time.

Data and Methodology

This analysis utilizes Anderson Codes for Land Use/Land Cover in order to determine which areas the Department would encourage and discourage solar installations. The 2012 Solar Siting Analysis utilized the Land Use/Land Cover data from 2007 to determine these areas. This update (2017) utilizes the most current Land Use/Land Cover data available for the State of New Jersey, which was completed in late 2012.

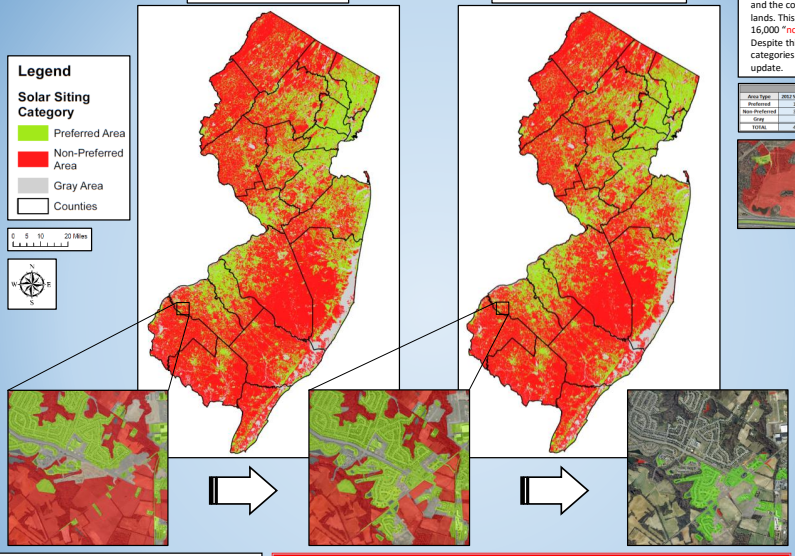
Each Anderson Code in the LU/LC data layer was assigned a category based on the Department's goals and preference for installing solar:

- Preferred Areas—characterized primarily as developed urban lands or barren land;
- Non-Preferred Areas—natural lands, dominated by forests, wetlands, agriculture, and open space that the Department sets out to protect and preserve;
- Gray Areas—water bodies and other land use types that do not fit into the other categories.

Once each Anderson Code was assigned a category for preference, they were integrated into the 2012 LU/LC GIS data layer, which was then clipped to the coastline. The acreage for each resulting polygon was calculated in ArcMap, prior to exporting the attribute table into Microsoft Excel for further analysis. In addition, a spatial overlay was conducted to compare the 2012 SSA GIS layer and the 2017 SSA Update GIS layer in order to identify areas where the siting preference category had changed so that additional analyses of the land use changes could be conducted (seen in the images above and in the top right).

2012 Solar Siting Analysis

2017 Solar Siting Analysis Update



Results

Between 2007 and 2012 (the dates of the LU/LC used for the 2012 SSA and the 2017 SSA Update respectively), there were minor changes to the overall land use in the state (see table below). The amount of "preferred area" for installing solar increased by almost 27,000 acres—mainly due to development and the conversion of forests and/or agricultural lands to urban lands. This same trend can be seen through the loss of roughly 16,000 "non-preferred" acres and roughly 10,000 "gray" acres. Despite this change, the overall percentage of each of these categories did not change from the 2012 analysis to the 2017 update.

Solar Siting Analysis

Area Type	2012 SSA Acreage	2017 SSA Acreage	Acreage Change	2012 % Total	2017 % Total	% TotalChange
Preferred	1,328,684.30	1,355,375.11	26,690.72	27%	27%	0%
Non-Preferred	3,025,783.79	3,009,765.26	(15,618.53)	61%	61%	0%
Gray	634,951.45	604,717.01	(9,884.44)	12%	12%	0%
TOTAL	4,968,869.83	4,970,037.38	1,167.75	100%	100%	0%

This is an example of a site that was acknowledged as "preferred" in the 2007 and was therefore shown as "Non-Preferred". However, in 2012 the Capital Health Medical Center in Hopewell was constructed, so the classification changed to "Preferred" based on the updated 2012 land use (Commercial/Services).

Discussion and Conclusion

When considering siting solar PV projects, existing impervious surfaces, such as residential and commercial rooftops and paved roadways and parking lots (for elevated solar carport systems), are most desirable since siting solar projects in these locations does not introduce any additional direct land disturbance that might affect ecosystem services. Siting solar in these locations is also in line with the Department's mission to preserve natural lands and open space.

Based on the 2017 SSA Update, roughly 27% of the State of New Jersey can be classified as "preferred" for installing solar, largely a result of urbanized development. While this tool can be used to identify where the "preferred areas" are in the State, there are many other considerations that should be taken into account when evaluating a proposed solar PV installation, including (but not limited to):

- Location and proximity to flood hazard areas;
- Location and proximity to threatened and endangered species;
- Location and proximity to environmental hazards (i.e. landfills, brownfields, and other contaminated sites)

Future land use changes and changes in solar technology will also have to be taken into account in future updates to this analysis. For example, the land use classification for Artificial Lakes (5300) is currently "gray" for the sake of this analysis. However, a new trend in solar technology is "floating solar"—or siting solar installations on floating pontoons on reservoirs and lakes. As these installations become more popular and economically feasible, the classification of Artificial Lakes may have to be adjusted to "preferred areas". Similar changes will also have to be considered as they are discovered and become more prevalent throughout the country and State.

Applying the Solar Siting Analysis

The Solar Siting Analysis can be used to evaluate a site, prior to solar PV installation, in order to identify which sections of the property would be best for siting the solar project. In the hypothetical example below, the SSA was applied to the "proposed site" and indicates which areas would be most preferred for solar—roughly 28% of the property, characterized by industrial rooftop and impervious parking lot locations. The remainder of the property is deemed to be non-preferred (34%) or gray (38%), characterized by mixed forest and wetlands, in addition to artificial lakes and other urban lands.

GRID PROJECT DEVOLOPMENT OUTLINE

10MW

STEPS		EVENT	TIME		COST	COMMENTS
1	**SITE CONTROL**		days			
		Site identification	30	$	5,000	
		Site LOI	30	$	5,000	legal
		Table Top DD Audits/ Fatal Flaws	30	$	20,000	civil engineering firm
		Site Control Option	30	$	25,000	Legal / payment to landowner
2a	**IX STUDIES**					
		Submit Application to PJM	30 -710	$	165,000	Study Fee and RD1 to PJM (155 fee + 10 Prep) /// (new PJM rules)
		AC IX final engineering	180-710	$	100,000	electrical engineering firm fees to design from submittal to approval
2b	**STATE INCENTIVE**					
		Submit Application for Incentive (Sub (t))	30 -45	$	25,000	engineering firm fee to compile and complete
			180 Days		**$ 345,000**	
1. Developer must commit 6 months & approx. $245,000 to get project to Site Control, PJM app. & State Incentive app. point of development						
2. At this point: developer waits to De-Risk project. Wait for results PJM Study and Receive Incentive						
3. IF: PJM IX study supportive & IF project receives incentive award;						
4. THEN - project reached 1st De-risk event and proceed to permiting stage						
3	**SITE DILIGENCE**		60			
		All Federal, State & Local		$	200,000.00	civil engineering firm
	SITE PLAN PREP		60			
		Civil preparation for submittal		$	100,000.00	civil engineering firm
		Electrical DC Solar design		$	50,000.00	Electrical engineering firm
	SITE PLAN SUBMISSION		180			
		Legal		$	75,000.00	to Shepard from submission thru resolution compliance
		Other Professional/ Witnesses		$	35,000.00	Prof. Planner for Variances, expert witnesses
		Township Submission Fees/Escrow		$	25,000.00	Fees to the Township
		Outside Agency Approvals/ Fees		$	100,000.00	Federal, State, and County
		Resolution Compliance Process	90	$	50,000.00	Process of revising site plans as per Townships conditions for Approval
			390 Days		**$ 635,000.00**	
	Total time and cost to get to Civil NTP		570 Days		**$ 980,000.00**	
4	**ELECTRICAL DCA SUBMISSION**					
		Submit for review and approval	120	$	250,000.00	
					$ 1,230,000.00	
TOTAL TIME & COST TO TAKE PROJECT FROM CONCEPT TO NOTICE TO PROCEED IS APPROX. 710 DAYS AND $1,250,000.00						