



State of New Jersey
DIVISION OF RATE COUNSEL
140 EAST FRONT STREET, 4TH FL
P. O. BOX 003
TRENTON, NEW JERSEY 08625

CHRIS CHRISTIE
Governor

KIM GUADAGNO
Lt. Governor

STEFANIE A. BRAND
Director

December 15, 2017

By Hand Delivery and Electronic Mail

Honorable Irene Kim Asbury, Secretary
NJ Board of Public Utilities
44 South Clinton Avenue, 9th Floor
P.O. Box 350
Trenton, New Jersey 08625-0350

Re: I/M/O the Board's Establishing a Generic Proceeding to Review the State of the Solar Market and I/M/O the Implementation of L. 2012, c. 24, the Solar Act of 2012, BPU Docket No. QX17090949

I/M/O I/M/O the Implementation of L. 2012, c. 24, the Solar Act of 2012, N.J.S.A. 48:3-87(q) (r) and (s) – Proceedings to Establish the Processes for Designating Certain Grid-Supply Projects as Connected to the Distribution System, BPU Docket No. EO12090832V

I/M/O the Implementation of N.J.S.A. 48:3-87(r), Designating Grid-Supply Projects and Connected to the Distribution System – Order Implementing Certain Provisions of N.J.A.C. 14:8-2.4(g) for Energy Year 2018, BPU Docket No. QO16020130

Dear Secretary Asbury:


Please accept this original and ten copies of Comments submitted on behalf of the New Jersey Division of Rate Counsel ("Rate Counsel") in connection with the above-captioned matter. We are enclosing one additional copy of the comments. Please stamp and date the extra copy as "filed" and return it in our self-addressed stamped envelope.

Honorable Irene Kim Asbury, Secretary
December 15, 2017
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Thank you for your consideration and assistance.

Respectfully submitted,

STEFANIE A. BRAND
Director, Division of Rate Counsel

By: 
Sarah H. Steindel, Esq.
Assistant Deputy Rate Counsel

SHS

c: publiccomments@njcleanenergy.com
Sherri Jones, BPU
B. Scott Hunter, BPU
Thomas Walker, BPU
Cynthia Covie, BPU
Rachel Boylan, BPU
Caroline Vachier, DAG
Michael Ambrosio, AEG

STATE OF NEW JERSEY
BEFORE THE BOARD OF PUBLIC UTILITIES

In the Matter of the Board's Establishing a)	
Generic Proceeding to Review the State of the)	
Solar Market)	
)	
In the Matter of the Implementation of <u>L. 2012,</u>)	
<u>C. 24</u> , The Solar Act of 2012)	BPU Docket No. QX17090949
)	
In the Matter of the Implementation of <u>L. 2012,</u>)	
<u>C. 24</u> , the Solar Act of 2012, <u>N.J.S.A. 48:3-</u>)	
87(Q)(R) and (S) – Proceedings to Establish the)	
Processes for Designating Certain Grid-Supply)	
Projects as Connected to the Distribution)	
System; and)	BPU Docket Number EO12090832V
)	
In the Matter of the Implementation of <u>N.J.S.A.</u>)	
48:3-87(R), Designating Grid-Supply Projects as)	
Connected to the Distribution System – Order)	
Implementing Certain Provisions of N.J.A.C.)	
14:8-2.4(G) For Energy Year 2018)	
)	BPU Docket Number QO16020130
)	

RESPONSES OF THE
NEW JERSEY DIVISION OF RATE COUNSEL
TO STAFF'S QUESTIONS FOR STAKEHOLDERS
IN THE GENERIC SOLAR PROCEEDING

December 15, 2017

Introduction

On September 22, 2017 the Board of Public Utilities (“BPU” or “Board”) issued an order directing BPU Staff (“Staff”) to convene a generic proceeding (the “Solar Generic Proceeding”) to review the state of the solar market. The Board also directed Staff to develop a list of topic areas and questions upon which stakeholders are to provide oral and written comments. On October 25, 2017, Staff circulated a draft of the questions to be to be considered in the Solar Generic Proceeding. Stakeholders provided input on the draft questions with the purpose of developing and refining a final set of questions. Staff released these final questions on November 30, 2017 with a request for responses by December 15, 2017.

Rate Counsel appreciates the opportunity to provide comments and feedback in the form of responses to Staff’s final questions. Rate Counsel also requests that the Board consider the following general response in addition to the following individual responses provided to the specific questions prepared by Staff.

Rate Counsel has been supportive of the State’s Renewable Portfolio Standard (“RPS”) since its 1999 adoption. While Rate Counsel did raise questions about the cost-effectiveness and rate impacts of the solar set aside that was established in 2004, we have worked hard with the Board, the Office of Clean Energy (“OCE”) and other stakeholders in creating solar programs and developing an overall solar market design that will help meet the goals of the solar set-aside while having minimal negative impact on ratepayers. Over the past 17 years, the solar industry in New Jersey has grown from a handful of highly-subsidized installations to a thriving, robust and diverse industry that far exceeds what any market participants anticipated back in 2004.

New Jersey’s solar RPS has been modified several times since its 2004 inception. In 2006, the Board amended the RPS to set steadily increasing requirements for renewable energy through Reporting Year 2021. In 2007, an eight-year rolling SACP schedule was implemented to ensure regulatory certainty and a degree of “securitization” for solar financing. And again, in 2012, the solar RPS goals were increased and the schedule extended to 2028. With each and every one of these changes, the financial and regulatory burdens of program changes and expansions have fallen exclusively on ratepayers.

Rate Counsel is also supportive of policy efforts to move the solar industry to a market-driven environment with limited ratepayer financial support. The increasing emphasis on ratepayer impacts was reinforced by the Board in the 2006-2007 “Solar Transition” proceeding,

where it noted that “minimizing ratepayer impact” and “minimizing transaction costs” would be two of its primary criteria for evaluating new solar market model modifications and program designs. The 2011 Energy Master Plan (“EMP”) noted the need for a “sensible balance” with “economic and political realities” of solar market development when it called for more accountability and more market-oriented approaches to financing New Jersey solar developments. One year later, the Solar Act of 2012 codified this policy direction by directing the Board to place greater reliance on competitive markets, with the explicit goal of “encouraging and ensuring the emergence of new entrants that can foster innovations and price competition.” The Board’s order implementing various aspects of this new legislation underscores the increasing importance of moving New Jersey’s solar market to one that is more “competitive.”

Much of the success of New Jersey’s solar energy development can be attributed to the significant financial support provided by New Jersey ratepayers. Time and again, ratepayers have been called upon to provide a financial backstop, or “insurance” for solar programs. From the early years of an over-subscribed rebate program and \$600 SREC prices to programmatic financial support (like utility solar loan programs, utility-owned installations on utility poles, warehouses, brownfields, landfills, as well as longer term solar “contracting” programs) ratepayer contributions have added up. All told, Rate Counsel estimates that through 2017 ratepayers have provided at least as much as \$3.2 billion in solar financial support that includes:

- Over \$2.3 billion (in 2017 dollars) in SRECs that have been included in ratepayers’ basic electricity service rates;
- Over \$370 million (in 2017 dollars) in estimated societal benefit charges (“SBC”) that supported the Office of Clean Energy’s (“OCE”) solar installation rebate program;
- An estimated \$126 million (in 2017 dollars) in PSE&G’s solar loan programs;
- An estimated \$220 million (in 2017 dollars) in “PSE&G’s Solar 4 All” and “Solar 4 All Extension” programs; and
- An estimated \$200 million (in 2017 dollars) in the long-term solar energy contracting programs for ACE, JCP&L and RECO.

The above amounts do not include the distribution charges and surcharges that are avoided by net metering customers as a result of “full retail” net metering credits.

The time has come to phase-out these significant levels of ratepayer financial support. The State's solar policy needs to move in a direction where the financial training wheels for solar are removed and the industry can progress on its own, independent of subsidies. The large number of solar installations, variety of solar installers, the falling cost of solar installations, and the continual over-supply of SRECs should be evidence enough that this market has matured and is robust enough to continue to succeed without significant ratepayer subsidization.

Even with these changes, amendments and assurances, New Jersey solar market participants have put forth the need to alter the solar RPS time and time again, for reasons ranging from "solar price volatility" and "market uncertainty," and ironically "regulatory uncertainty" which was ultimately the product of the industry's own proposals to change rules, programs and market designs year-in and year-out both at the legislature and before the Board. In each instance, ratepayers have backed up these regulatory changes and reforms and absorbed the brunt of the costs and burdens resulting from these industry-requested changes. It is time for ratepayers to start receiving the benefits of their 17-year support for solar energy in the form of lower solar energy costs, and, more importantly, reduced solar energy subsidies.

Current policy allows for SREC prices of over \$200 which represent a windfall for solar developers, and a price cap (or SACP) of \$308 which only ensures excessive, above-market returns for the solar industry at ratepayers' expense. Rate Counsel recommends that the Board continue with its currently established commitments and policies for solar energy, but refrain from adopting any new policies, initiatives or levels of financial support, and work towards developing a roadmap whereby current ratepayer subsidies for solar energy are rolled back and ultimately eliminated.

I. Policy Goals and Objectives:

- i. The Board found the following goals and objectives appropriate for evaluating various policy approaches in the “Solar Transition” Proceeding from 2006/07 (I/M/O Energy Portfolio Standards – Alternative Compliance Payments and Solar Alternative Compliance Payments, BPU Docket No. EOO6100744, Order dated September 19, 2007):**

- **Sustained Orderly Market Development**
- **Minimize Ratepayer Impact**
- **Minimize Transaction Costs**
- **Support other policy goals including environmental and public health, equity to all ratepayer classes, job growth, improved reliability and security.**

Are these goals still relevant? Please explain why or why not.

Response:

Yes, but the Board has historically focused more heavily on market development and environmental goals associated with solar development. The time has come to start weighting policy priorities in the direction of reducing ratepayer impacts. As Rate Counsel outlined in its introductory comments, ratepayers have already spent \$3.2 billion in solar financial support and are committed to support New Jersey’s solar installations for the foreseeable future. Thus, minimizing ratepayer impact should be the Board’s primary focus. The best method by which the Board could improve ratepayer rate impacts is through the development of a clear and well-defined glide path that reduces solar financial support in an expedited fashion over the next several years.

- ii. **The September 22, 2017 Board Order (I/M/O the Board's Establishing a Generic Proceeding to Review The State Of the Solar Market – Staff's Update, BPU Docket No. QX17090949) establishing this Generic Proceeding describes a thriving solar market in New Jersey that far exceeds what market participants had predicted. Given that a robust and diverse solar market has been established, what should be the focus of the State's solar policy?**

Response:

The focus of the State's solar policy should be one that reduces ratepayer subsidies for solar energy primarily through the aggressive reduction of the SACP. Rate Counsel recommends that the Board phase out the SACP. Current SREC prices of over \$200 are a windfall for solar developers and a SACP of \$308 only ensures an even greater excessive return. Rate Counsel estimates that a typical residential solar system with an installed cost of \$3.25 per watt, should only need an SREC of \$115 in order to receive a 12 percent internal rate of return ("IRR").¹ Likewise a commercial solar installation, with an installed cost of \$2.25, should only need an SREC of \$70 in order to receive a 12 percent IRR. Rate Counsel estimates that current SREC prices are almost double what is needed for a residential solar installation and triple that needed for a commercial solar installation. Current SACP prices are even further above the IRRs needed to stimulate residential and commercial installations, yielding a 24 percent return for residential projects and a 33 percent return for commercial projects.²

Table 1 below provides an outline of the remaining solar liability ratepayers bear under the current solar RPS and SACP schedule. The first set of columns show that with the currently established SACP prices, ratepayers' solar liability totals \$4.8 billion between EY 2018 and EY2028. The second set of columns presents a phase-out of the SACP in a linear fashion, reducing the SACP value to zero by EY2028. This phase-out would reduce ratepayer exposure by almost \$1.8 billion over the next decade, a difference of almost 40 percent. The SACP would still be above the estimated price currently needed for residential installations through EY2024, meaning solar installers would continue to receive prices above what is necessary to stimulate investment.³ Ratepayers should not continue to fund technologies that are cost-effective and markets that are self-sustaining.

¹ The assumed residential and commercial IRR used in this example is the same target IRR utilized by the OCE and Summit Blue for market design purposes in the 2006-2007 Generic Solar Proceeding.

² This does not include potential net metering credits.

³ This assumes installation costs remain constant, thus any likely further reduction in installation prices would reduce only serve to raise a project's IRR.

Table 1. Ratepayer Exposure for New Jersey's Solar RPS

Energy Year	Solar RPS (Current)				Solar RPS (with phased-out SACP)			
	RPS (MWh)	SACP (\$/MWh)	Ratepayer Exposure (million \$)	Cumulative Ratepayer Exposure (NPV \$)	RPS (MWh)	SACP (\$/MWh)	Ratepayer Exposure (million \$)	Cumulative Ratepayer Exposure (NPV \$)
2018	2,401,023	308	739.5	672.3	2,401,023	308	739.5	672.3
2019	2,468,551	300	740.6	1,284.3	2,468,551	277	684.3	1,237.8
2020	2,536,080	293	743.1	1,842.6	2,536,080	246	624.9	1,707.3
2021	2,603,609	286	744.6	2,351.2	2,603,609	216	561.3	2,090.7
2022	2,671,138	279	745.2	2,813.9	2,671,138	185	493.6	2,397.2
2023	2,738,666	272	744.9	3,234.4	2,738,666	154	421.8	2,635.3
2024	2,806,195	266	746.4	3,617.5	2,806,195	123	345.7	2,812.7
2025	2,873,724	260	747.2	3,966.0	2,873,724	92	265.5	2,936.6
2026	2,941,253	253	744.1	4,281.6	2,941,253	62	181.2	3,013.4
2027	3,008,781	250	752.2	4,571.6	3,008,781	31	92.7	3,049.1
2028	3,076,310	239	735.2	4,829.3	3,076,310	-	-	3,049.1
2018-2028: \$ 4,829.3				2018-2028: \$ 3,049.1				
Difference from Current Solar RPS (2018-2028): \$ (1,780.2)								

iii. What is the role of solar energy in meeting the State's overall Clean Energy objectives? How important is achieving the percentage requirements set-aside for Solar Renewable Energy Certificates ("SRECs") in the Renewable Portfolio Standards ("RPS")?

Response:

Since its inception in 1999, the New Jersey RPS, and its corresponding solar-set aside, has been one of the most aggressive in the U.S. The RPS was established to drive the market deployment of new clean energy technologies with the intent that expansion of renewable energy generation would provide significant economic development and environmental benefits, thereby advancing New Jersey's clean energy objectives and greenhouse reduction goals.

The solar RPS has been instrumental in achieving the State's renewable energy and solar development goals. In general, the RPS creates market demand that allows renewable energy technologies to achieve economies of scale in manufacturing and installation so that these technologies can compete better with conventional electric generation sources. As the solar market has matured, the volume of solar modules sold has increased exponentially and costs have fallen dramatically. At the end of October 2017, there were over 96,000 solar projects installed in New Jersey with a total capacity of 2,720 MW, or 2.7 GW. This is an avoidance of almost 10 million metric tons of carbon emissions, on a cumulative basis since the solar set-asides inception. In addition, the U.S. Department of Energy reports that the average price of utility-scale solar has fallen below \$1 per watt, and below \$0.06 per kWh – a goal that was intended to be reached by 2020.⁴ Researchers with the National Renewable Energy Laboratory ("NREL") have stated that "[t]he rapid system capital cost decline of solar PV systems, driven by lower module prices and higher market competition this year, demonstrates the continuing economic competitiveness of solar PV in today's energy investment portfolio,"⁵

Lastly, Rate Counsel agrees that, at least in the past, having a solar set-aside as part of the overall New Jersey RPS, has been important in defining and creating a regulatory framework for New Jersey's solar energy goals. The solar set-aside shielded solar energy from other lower-cost renewable energy resources and led to the creation of a solar market design that has more than adequately supported solar energy development for a number of years. However, Rate Counsel

⁴ Greentech Media. Available at: <https://www.greentechmedia.com/articles/read/doe-officially-hits-sunshot-1-per-watt-goal-for-utility-scale-solar#gs.Xl=iZTk>

⁵ NREL, Available at: <https://www.nrel.gov/news/press/2017/nrel-report-utility-scale-solar-pv-system-cost-fell-last-year.html>.

encourages the Board to begin the transition away from these types of set-asides as solar, and renewable energy in general, becomes competitive with grid-supplied electricity. Over time, both solar and all renewables need to stand on their own and bear both risks and opportunities afforded in competitive energy commodity markets.

- iv. Are other goals more appropriate? Have low and moderate income consumers been provided sufficient access to the incentives that make solar adoption affordable in New Jersey or should the Board explore means to increase access to low and moderate income consumers? Should the Board institute consumer protection safeguards for solar consumers, for hosts of third party owned solar projects, for investors in solar projects, or for ratepayers? Should energy storage market development be linked in some way to the existing solar policies and if so, how?**

Response:

Rate Counsel supports ratepayer protections, particularly those that shield vulnerable portions of our society (lower income, fixed income households) from predatory practices of what is likely a limited number of participants in the solar market. However, lower income and fixed income households would likely be best served not through new solar energy programs, but rather a direct reduction in their electricity bills. Solar energy costs are passed on to ratepayers through their electricity bills and those bills, adjusting for fuel cost changes, have been increasing every year. Figure 1 estimates the historic trends in New Jersey's non-fuel related costs (in average revenue terms)⁶ including solar energy costs which are also passed along to New Jersey ratepayers in two ways: first, SREC costs are passed through to customers in their generation service costs; and second, EDC program-related costs (such as PSE&G's Solar Loan Programs, or Solar 4 All and its various extensions) are recovered through a series of cost recovery mechanisms often referred to as "clauses" or "trackers." The estimated series provided in Figure 1 includes both of these costs (but excludes any other commodity or fuel-related expenses) and the trends clearly show that New Jersey non-fuel utility costs and solar energy costs have been steadily increasing since 2008, at an average annual rate of six percent, far faster

⁶ The data in Figure 1 represents the rates associated with the entire distribution level cost of service used for retail ratemaking. The state-level data reported by the Energy Information Administration includes the "all-in" costs of providing electric service, including clause and tracker-related costs, as well as generation and transmission related costs. The data used in this figure backs out all generation and transmission-related costs to arrive at a "non-fuel" distribution level cost of providing electricity. These distribution level "non-fuel" related costs are then divided by retail sales volumes (kWhs) to put them on an "average" or "per kWh" basis.

than the average annual rate of price inflation in the U.S. economy, over a comparable period of time, as measured by the consumer price index (or CPI).

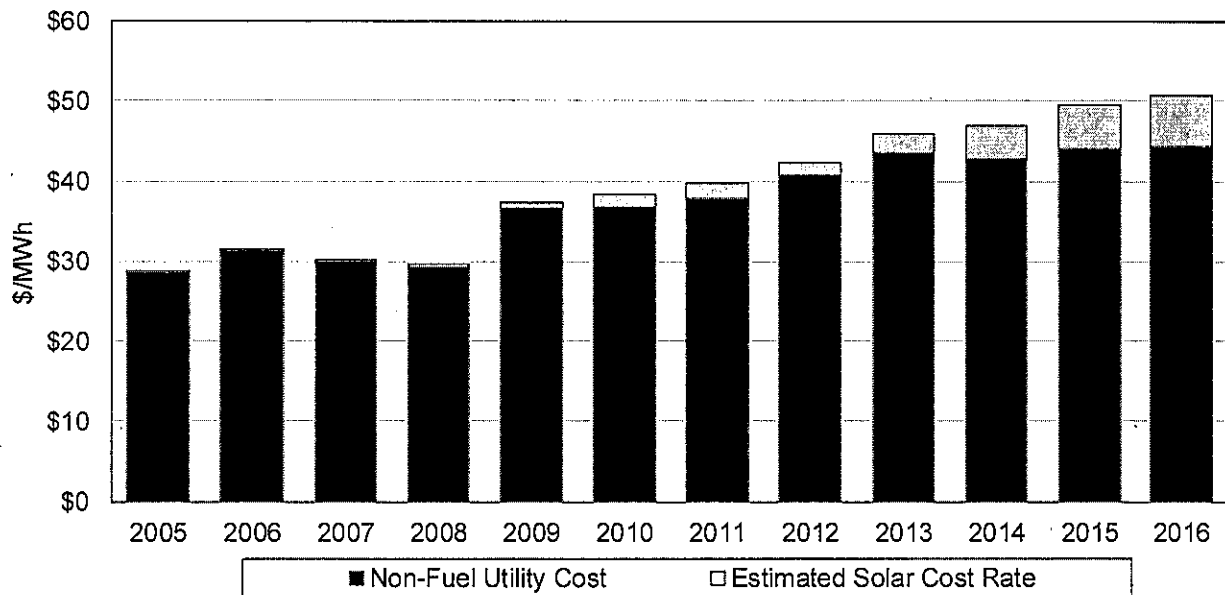


Figure 1. Estimated New Jersey EDC non-fuel utility and solar energy costs (\$/MWh)

Source: FERC Form 1.

The increases in non-fuel utility and solar-related costs are even more problematic for lower income households. Figure 2 examines average, residential electricity expenses (including base charges and solar costs) as well as how those expenses have changed over time as a share of household income for both median and low-income households. Base electricity expenditures, including solar SREC costs, have been increasing dramatically as a share of income for lower-income households; to a level that, by 2016, has reached almost one percent of total lower-income household income. The annual average percent increase for these households is more dramatic increasing at an average rate of eight percent per year.

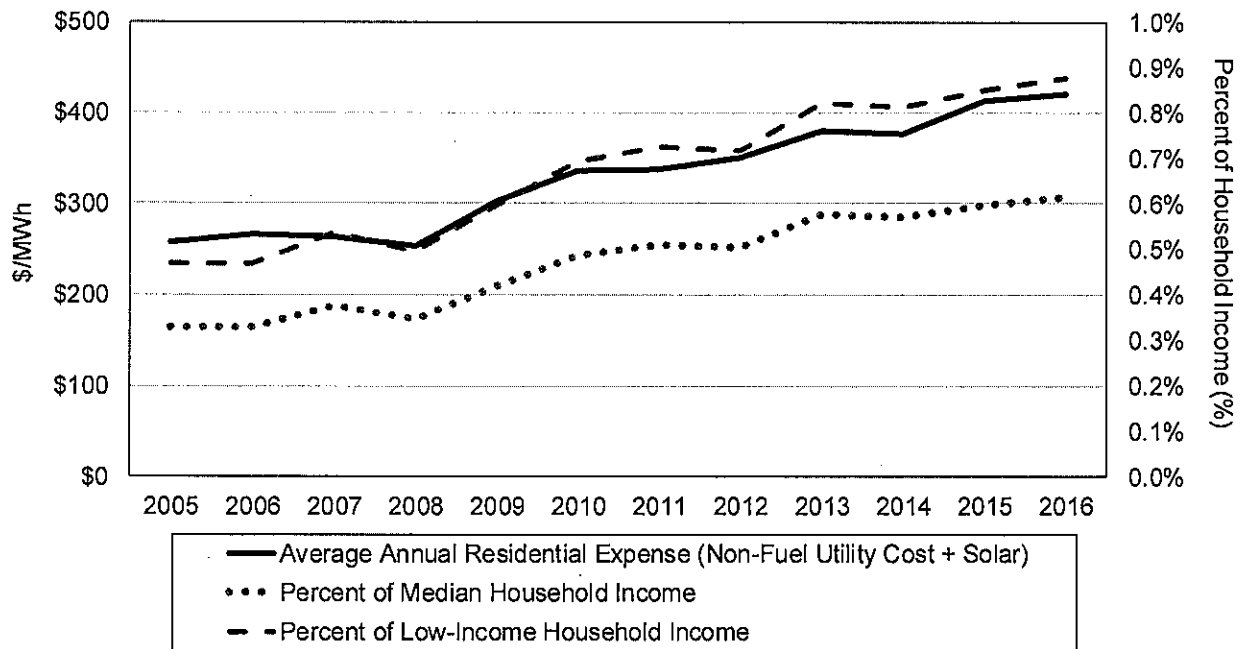


Figure 2. Estimated New Jersey EDC non-fuel utility and solar costs on a dollar (\$/MWh) and share of household income basis (%)

Source: FERC Form 1 and U.S. Census.

Lastly, with regard to energy storage, Rate Counsel sees this as an issue that should be treated separately and differently from solar energy or other renewable energy policy issues. The Board should focus on reducing ratepayer financial support for solar energy, and ultimately all renewable energy development, and consider the role for energy storage, and any potential ratepayer financial support needed for these technologies, on a separate basis.

II. Solar Economics and Incentives:

- i. Are the current State/BPU policies sufficient to meet the State's solar goals. These policies include: retail net metering; streamlined interconnection of customer-sited solar; SREC eligibility for customer-sited solar connected to the distribution system serving NJ; SREC eligibility for utility-scale grid supply project; and state and local tax incentives? If not sufficient, what changes should be considered?**

Response:

In terms of meeting the State's solar RPS goals, current BPU policies are sufficient. As outlined in Rate Counsel's introductory comments, solar installations in New Jersey have grown exponentially and currently total 2.7 GW, or 13 percent of the State's electric generating capacity. Rate Counsel's primary recommendation is for the Board to continue with its currently established commitments and policies for solar energy with the goal of meeting the currently established solar RPS targets through EY 2028 and transitioning the solar market to one that is self-sustaining.

A recent OCE analysis presented in its October 27, 2017 webinar (Figure 3) shows that the projected number of SRECs available through EY 2027 far exceed the obligation for solar RPS compliance. The OCE stated that "under current requirements, the total SRECs available for compliance in the baseline is expected to exceed the solar obligation through EY2027."

Estimated SRECs Available for Compliance vs Solar Obligation

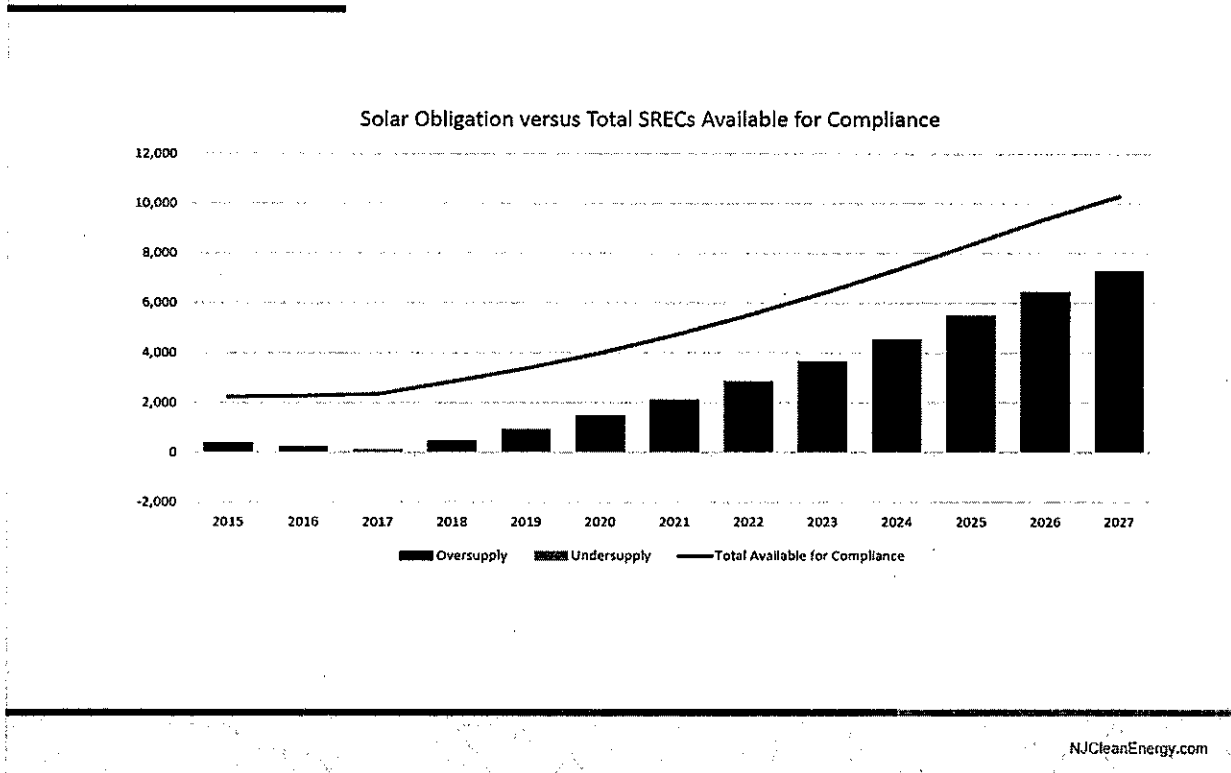


Figure 3. OCE analysis, solar capacity vs solar obligation

Source: TRC Solar Analysis, available at: <http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-proceedings>.

Should the Board choose to pursue new policies or development goals, it should only do so after thorough investigation of any proposed policy change. This would include a commissioned study to consider the economic and ratepayer impact of a policy change and modeled with financial targets and metrics that have been fully evaluated in contemporaneous data and research.

- ii. **If changes to the existing framework of incentives are recommended, please estimate the impact on NJ solar market economics and the cost and benefits to ratepayers.**

Response:

Rate Counsel recommends that the focus of the State's solar policy should be one that reduces ratepayer subsidies for solar energy primarily through the aggressive reduction of the SACP. Rate Counsel recommends that the Board phase out the SACP in a linear fashion, reducing the value to zero by EY2028. This policy will gradually reduce ratepayer financial burdens, but will do so in a fashion that continues to support continued solar installations since (a) solar energy development costs continue, and are anticipated to continue, falling between now and 2028 and (b) most forms of solar energy are likely to be competitive and reach grid parity well before 2028.

Table 2 presents Rate Counsel's recommended phase-out of the SACP and the estimated impact on residential and commercial solar installations. The first two columns show the currently established SACP and Rate Counsel's recommended phase-out of the SACP. The third column is an implied SREC price, assuming that SRECs remain at a level that is 75 percent of the SACP. The last two columns calculate an implied rate of return, showing return a project would realize given the implied SREC price. For example, in 2020, if the SACP were reduced to \$246 the implied SREC price would be \$185. This would result in a project return of 18.1 percent for residential projects and 24.5 percent for commercial projects. Both of these returns are well above the target IRR of 12 percent that has been used to evaluate solar projects and programs. Residential projects do not fall below the 12 percent threshold until 2026, and commercial projects remain above 12 percent until 2028.

Table 2. Ratepayer exposure for New Jersey's solar RPS

Energy Year	Current SACP (\$/MWh)	Recommended Phase-Out SACP (\$/MWh)	Implied SREC at 75% (\$/MWh)	Implied Rate of Return	
				Residential (%)	Commercial (%)
2018	308	308	231	19.6%	26.7%
2019	300	277	208	18.9%	25.7%
2020	293	246	185	18.1%	24.5%
2021	286	216	162	17.2%	23.3%
2022	279	185	139	16.2%	21.9%
2023	272	154	116	15.1%	20.3%
2024	266	123	92	13.9%	18.6%
2025	260	92	69	12.6%	16.7%
2026	253	62	46	11.1%	14.6%
2027	250	31	23	9.5%	12.2%
2028	239	-	-	7.7%	9.5%

- iii. **Are the financial targets used to inform policy choices in the “Solar Transition” referenced above still relevant (i.e. 12% Internal Rate of Return (“IRR”), < 10 year payback)? Given the maturity of the New Jersey market, are these metrics still meaningful? If these targets are outdated, what financial targets should be used in modeling to inform policy choices?**

Response:

As discussed above, Rate Counsel recommends that the Board phase out ratepayer subsidies and allow the competitive market to determine rates of return on solar projects. Nevertheless, the analysis Rate Counsel presented in Table 2 above (in response to Question II.ii) shows that the market would not be adversely impacted, even if the 12 percent IRR used by OCE and Summit Blue in the 2006-07 Solar Transition proceeding is still relevant in today’s market. Rate Counsel notes that, at a minimum, it may be the case that the 12 percent IRR was actually too high in establishing a threshold for solar installations given the number of installations over the past several years and that the SREC market is projected to remain long relative to overall market requirements. Further, the Board should be mindful that many of the other assumptions, outside those associated with the threshold IRR, have been undermined by actual market conditions that have materialized since the 2006-07 Solar Transition proceeding.

For instance, in the 2006-07 Solar Transition proceeding, OCE and its consultant Summit Blue, developed a model to analyze the potential ratepayer impacts of proposed market transition models.⁷ This model was relied upon heavily throughout the Solar Transition proceeding. One of the assumptions included in the model was a projection of retail electric prices. These prices were used to calculate an “electricity savings” or an avoided cost, that solar installations would realize by generating their own electricity. Figure 4 shows the residential prices assumed by OCE in its model compared to the actual residential retail prices in New Jersey over the last 10 years. OCE assumed that the residential retail price would increase at an average annual rate of 2.99 percent, when in fact, prices actually increased at an average annual rate of 3.3 percent. And, in some years, the increase in the residential retail price was as much as 10 percent. This means that OCE’s model under-estimated the savings realized by residential solar installations and it is likely that the projects installed during this time-period realized a return greater than the targeted 12 percent.

⁷ OCE’s “SACP Ratepayer Impact Model” is available at: <http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-proceedings>.

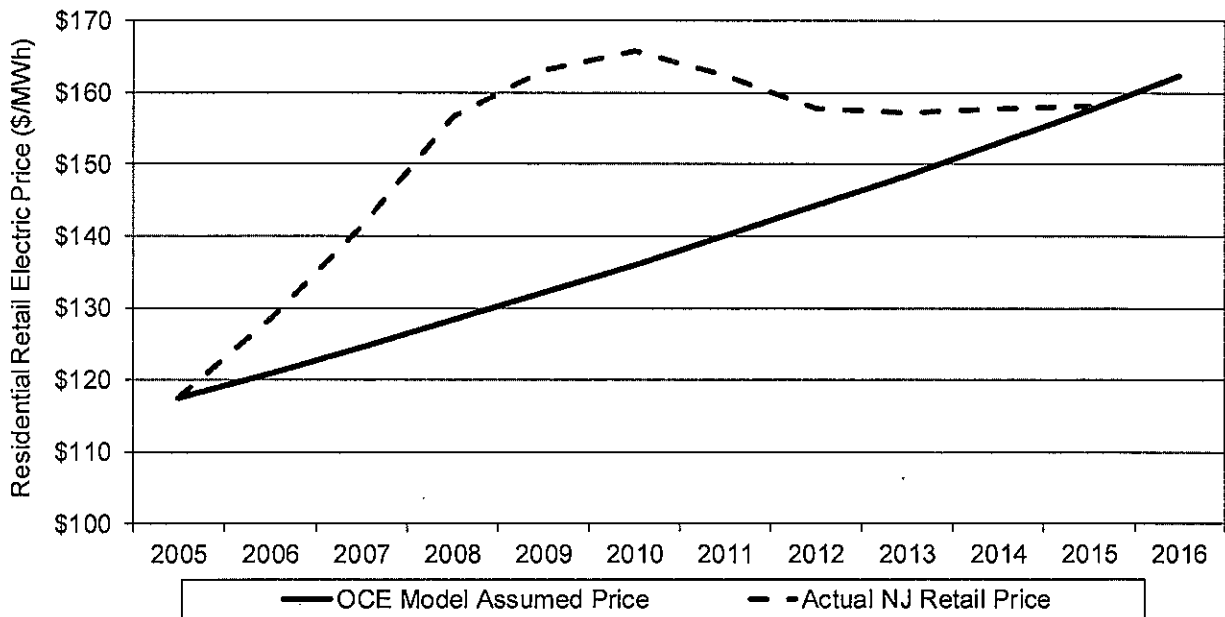


Figure 4. Residential retail electric price comparison: OCE model and actual prices

Source: OCE's "SACP Ratepayer Impact Model," available at: <http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-proceedings>; and Lawrence Berkeley National Laboratory. 2017. Tracking the Sun 10, available at: https://emp.lbl.gov/sites/default/files/tracking_the_sun_10_report.pdf

In addition, the OCE model used the U.S. Energy Information Administration's 2007 Annual Energy Outlook as support for its assumed residential solar installation cost. These assumed costs, presented in Figure 5 below, started at a 2005 price of \$8.57 per watt and decreased at an average annual rate of 2.2 percent. As the figure shows, the cost of residential solar installations fell much more dramatically than the OCE model anticipated. This significant difference in installation costs translates into even greater savings and higher rates of return for solar installations.

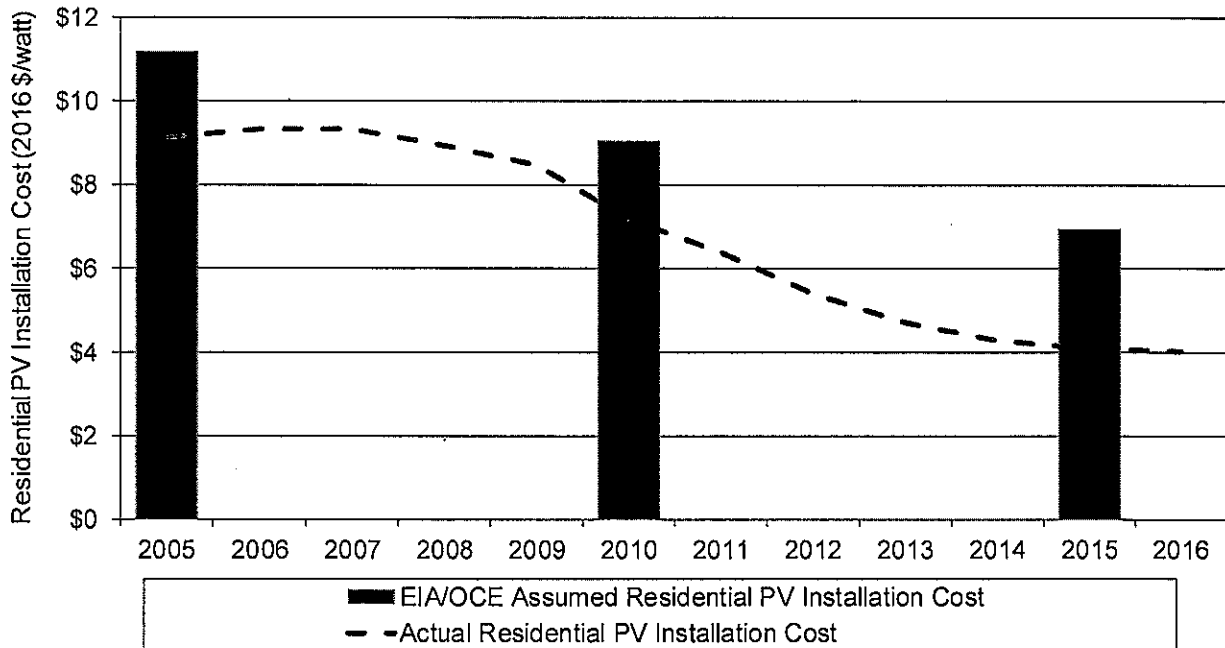


Figure 5. Residential PV installation costs: OCE model and actual

Source: OCE's "SACP Ratepayer Impact Model," available at: <http://www.njcleanenergy.com/renewable-energy/program-updates-and-background-information/solar-proceedings>; and Lawrence Berkeley National Laboratory. 2017. Tracking the Sun 10, available at: https://emp.lbl.gov/sites/default/files/tracking_the_sun_10_report.pdf

In addition to falling costs, solar PV economics have also improved by rising efficiencies. Figure 6 shows that since 2005, median module efficiencies have increased from 13.5 percent to over 17 percent in 2016. In comparison, the OCE model assumed an implied efficiency of just 11.4 percent. Even small improvements in efficiency can translate to large gains in output and thus reduced costs. The combination of these factors (retail price, installed cost and module efficiency) has likely made solar development much more affordable for a wide range of market participants from the most significant level of installation to the lowest.

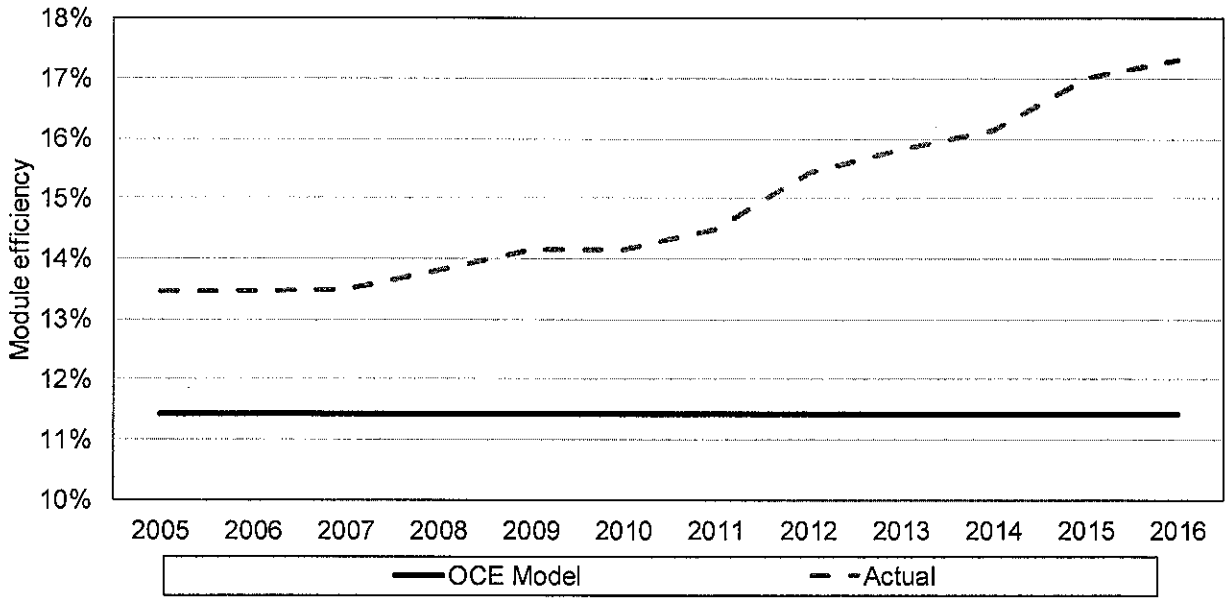


Figure 6. PV module efficiency: OCE model and actual

Source: OCE's "SACP Ratepayer Impact Model," available at: <http://www.nicleanenergy.com/renewable-energy/program-updates-and-background-information/solar-proceedings>; and Lawrence Berkeley National Laboratory. 2017. Tracking the Sun 10, available at: https://emp.lbl.gov/sites/default/files/tracking_the_sun_10_report.pdf

- iv. **How should or can any proposed changes in the State's solar incentive policies account for changes in the future solar and electricity markets such as the federal imposition of module import tariffs, more widespread adoption of electric vehicles, or increased costs from other priorities such as offshore wind, microgrids or storm hardening?**

Response:

Rate Counsel recommends caution and continued study in examining the impacts that future market and regulatory changes will have on solar installations in New Jersey. Many of the issues offered in this question (offshore wind, microgrids, storm hardening) will take years to evolve and will not likely have an immediate impact on solar development. And, with regards to the issue of solar trade disputes, there is uncertainty as to how the imposition of tariffs on solar equipment will impact overall installations. It has yet to be determined what the tariff will look like, if one is implemented.

As noted in Rate Counsel's response to Question II.i, the projected number of SRECs available through EY 2027 far exceed the obligation for solar RPS compliance. If there is a negative impact due to module import tariffs, or any of these issues, it is unlikely to seriously affect New Jersey's solar RPS compliance. The Board will need to continue to be vigilant in its analysis of energy markets and policy, but any analysis of these potential issues is best addressed in the future, rather than in this general review.

- v. Should the Board consider providing more oversight to the market to ensure that the SREC market and the Electric Distribution Companies' ("EDCs") auction of SRECs are competitive and that no conditions could lead to market manipulation? Are the current practices for reporting installed capacity sufficient to ensure timely and accurate information in support of market transparency? If not, what improvements should be made?

Response:

Yes, the Board should consider providing more oversight to the market to ensure SREC market competition and to help guard against market manipulation. Rate Counsel has expressed concern in the past regarding the potential for market manipulation in the New Jersey SREC market.⁸ In 2012, the Solar Act accelerated increases in the solar RPS and limited the large grid supply projects that could receive SRECs. As a result, SREC prices increased. In fact, the weighted average SREC price increased 80 percent between March 2013 and March 2016, from \$142 to \$256 per SREC.

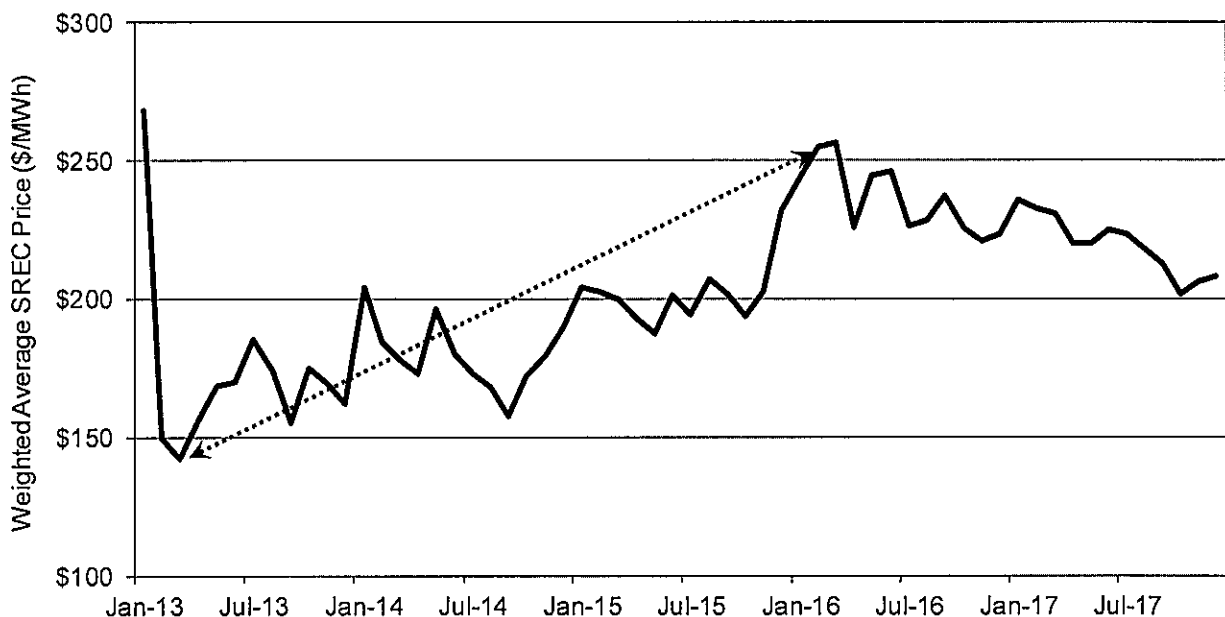


Figure 7. Weighted average SREC price trends

Source: PJM GATS, available at: <https://www.pjm-eis.com/reports-and-events/public-reports.aspx>.

More importantly, SREC prices were reaching levels that were close to parity with the SACP. As a result the SACP became less significant since the price of the SREC is nearly

⁸ BPU Docket No. QO16020130.

equivalent to the penalty, thus failure to comply becomes less costly. In other words, the market price for solar energy (as represented by SREC prices) has been converging to the administratively determined cap, or maximum price for solar that is allowed in the market (as represented by the SACP).

A leveling in prices or even a modest increase following the 2012 restructuring of the RPS would not have been surprising as those changes began to take effect in 2014. However, the substantial and persistent increases over a 12 to 18-month period was perplexing at best, and at worst suggested that SRECs were not being offered into the New Jersey marketplace. The number of solar development programs and support mechanisms in place should have facilitated an increase in solar generation and the supply of SRECs. New Jersey's solar capacity had increased over 67 percent since 2012 and regional and national solar installation costs were falling. Further, Congress had agreed to extend the solar investment tax credit ("ITC") for an additional five years. Given New Jersey's robust SREC market and continued support for solar development, it was difficult to understand what market dynamics could be influencing these high prices, particularly when prices should have been flat or decreasing. At the time, Rate Counsel urged the Board to install a market monitor or establish a monitoring mechanism for the New Jersey SREC market. The appointment of a market monitor or monitoring process would help assure that policies are achieving their desired results. The resulting data and analysis would be useful to the Board and its Staff in determining how much additional capacity is needed to ensure an adequate supply of SRECs at prices that are reflective of the actual costs of solar projects. Ongoing monitoring would help identify and remedy abnormalities in the market on a more timely basis.

III. RPS Design Elements & Eligibility Criteria:

i. Should the RPS be phased out?

Response:

Yes. However, Rate Counsel's primary recommendation is for the Board to phase out ratepayer financial support for solar installations by 2028. The best method for doing this is not to reduce the total installations that are supported by SREC financing, but to help drive down SREC prices by driving the overall market cap price (the SACP). As noted in response to Question I.ii, Rate Counsel recommends that the SACP be phased out over the next 10 years. Current SREC prices of over \$200 are a windfall for solar developers and a SACP of \$308 only ensures an even greater excessive return. Ratepayers should not continue to fund technologies that are cost-effective and markets that are self-sustaining. Phasing out the solar set-aside will eliminate the need for any solar energy enforcement mechanism. Once the need for the solar set-aside is removed, it is likely any comparable renewable energy enforcement mechanism, such as the RPS overall, will no longer be needed since, if solar is at grid parity, it is likely that most other currently commercially available renewables will be driven by market forces to reach grid parity.

- ii. **Should the RPS be restructured to set goals specific to each market segment (residential, commercial & industrial (“C&I”) and grid supply connected to NJ distribution)? Can the NJ Class I provisions in the RPS be modified to enable more cost effective achievement of solar and other renewable energy goals. If so, how?**

Response:

No. Rate Counsel’s primary recommendation is for the Board to continue with its currently established commitments and policies for solar energy with the goal of meeting the currently established solar RPS targets through EY 2028. Rate Counsel believes that the current review needs to strongly consider the transition of the solar market to one that is self-sustaining by rolling back SACP prices that, in turn will drive down SREC prices and ratepayer financial support costs for solar installations.

If the Board decides to consider policy changes to restructure goals specific to certain market segments, it should only do so after commissioning a study to explore whether this can be done in a cost-effective and sustainable manner. Such a study should investigate whether the identified market segment(s) could ever be cost-effective or self-sustaining (with or without government support); and at what cost to ratepayers. If the identified market segment(s) are deemed likely to not ever be cost-effective or self-sustaining, then such policies to support these segments should not be pursued.

- iii. Should the utility-scale, grid supply solar segment continue to get SRECs since left unfettered this segment with its economies of scale and relatively lower priced SREC requirements can crowd out residential and C&I market segments? Is the award of fractional SRECS or NJ Class I REC multipliers a feasible means to level the economic incentives needed by different scale solar generation facilities?

Response:

Rate Counsel appreciates that larger-scale, grid connected solar energy projects are already cost effective with grid provided power and will be increasingly more competitive over time. One method of facilitating the ramp-down of ratepayer financial support for solar energy could be through the exclusion of large scale projects. While Rate Counsel supports larger scale solar installations, and their favorable economics, we understand that this option may afford a balancing of interests in any future solar transition. Rate Counsel is interested in considering this option as a form of market redesign in the future provided that the redesign has a defined time period for phasing-out all forms of ratepayer financial support.

- iv. Are the design concepts developed in the Solar Transition and modified by subsequent statutes still relevant? Should the Board consider changes to any of the following policies: the lack of a size limit on net metered project capacity; net metered “on-site generation” projects eligible for SRECs; 15-year Qualification Life; 15-year Solar Alternative Compliance Payment (“SACP”) schedule; 5-year SREC vintage/bankability?

Response:

Rate Counsel believes that the current market design characteristics are satisfactory given our broader recommendation that ratepayer financial support for solar energy should be ramped down by 2028. Rate Counsel recommends that the reduction in this ratepayer financial support should be through an aggressive compression of the SACP schedule to zero by 2028 – so, at least from the perspective of the current SACP schedule, Rate Counsel is recommending that SACP schedule be modified in such a way that it is ramped down to zero by a date certain. Rate Counsel is hesitant to recommend any other market design changes (like the qualification lives, etc.) since these recommendations could conflict, or lead to unanticipated consequences, relative to our broader recommendation to ramp down ratepayer solar energy financial support. Our positions on net metering are discussed below in Section IV.

- v. **Are the EDC SREC-based Finance programs still necessary (i.e., PSE&G's Solar Loan III, PSE&G Solar for All Extension II, and the ACE, JCP&L and RECO SREC-II competitive solicitations for ten year contracts)?**

Response:

The EDC SREC-based Finance programs should remain in place, with their original end dates, and should be allowed to expire, without renewal, at their scheduled end dates. No new utility-funded solar energy programs need to be offered or approved after these expirations.

- vi. **Has the Board's shared implementation of Subsection t of the Solar Act of 2012, N.J.S.A. 48:3-87(t), with the New Jersey Department of Environmental Protection ("NJDEP") been sufficiently effective at siting solar generating facilities on marginal lands such as landfills and brownfields? If not, how could it be improved?**

Response:

Yes, implementation of subsection t has been more than sufficient. The Board approved PSE&G's Solar 4 All Extension programs (S4AE) that included 75 MW of solar capacity to be installed on landfills and brownfields.⁹ The anticipated unit costs for the capital investments associated with the S4AE programs were very large, averaging over \$5,000 per kW. These costs were even more significant given the fact that these are large projects, comprised of several MW of capacity each, failing to recognize any economies of scale.¹⁰

Approval of the S4AE programs was based on a premise that the market needed new solar energy capacity development in certain underrepresented sectors such as landfills and brownfields. PSE&G argued that the S4AE programs were consistent with the EMP which discourages the development of solar farms in farmland and undeveloped open spaces and encourages development "on or above impervious surfaces or on landfills, brownfields or areas of historic fill."¹¹ While PSE&G was correct in that the EMP encourages development on such sites, the use of this statement as justification for the S4AE programs missed some of the more important, over-arching themes of the EMP. The 2011 EMP explicitly noted:

The Christie Administration's pursuit of environmental goals does not subordinate other worthwhile resource planning goals centered on reliability and economics. Reducing energy costs, encouraging employment and embracing environmental stewardship are laudable but often competing objectives. New Jersey's policy initiatives are designed to accomplish these goals in a cost-effective manner and consistent with the State Strategic Plan. New Jersey's environmental, economic, and reliability goals require that cost/benefit studies rationally measure total impacts, including direct energy costs, quantifiable environmental benefits, and indirect socio-economic benefits. This will lead to informed decisions that incorporate good tradeoffs among competing resource planning objectives."¹²

The 2015 EMP Update does not distract from this as it states: "[t]he existing goals to promote solar projects that provide both economic and environmental benefits are sound and

⁹ <https://www.pseg.com/info/media/newsreleases/2016/2016-11-30.jsp#.Wi2sy0trxBw>

¹⁰ BPU Docket No. EO12080721. Direct Testimony of David E. Dismukes filed January 18, 2013.

¹¹ 2015 New Jersey Energy Master Plan Update, p. 29.

¹² 2011 Energy Master Plan, p. 75, emphasis added.

should be continued.” Rate Counsel is concerned, however, that the approval of these plans may have “squeezed out” or discouraged more competitive alternatives that could have been developed in the market (primarily in PSE&G’s service territory), but declined to do so in the face of ratepayer-supported utility programs like the one conducted by PSE&G.

Further, the other three EDC’s (ACE, JCP&L and RECO) have all had long-term solar contracting programs that could have competed with PSE&G’s S4AE programs. Unlike the PSE&G programs, the EDC longer-term SREC contracting programs have the added benefit of requiring all potential landfill developer participants to pay for the administrative costs of the program, minimizing ratepayer impacts. However, no bids for brownfields or landfill projects have been received for any of these EDC long-term SREC contracting programs.

IV. Net Metering & Interconnection Design Elements & Eligibility Criteria:

- i. Are the Board's current net metering and interconnection rules consistent with the State's policy goals as expressed in the statute and RPS, objectives, design, eligibility criteria, etc.?**

Response:

Rate Counsel believes that New Jersey's net metering program needs to be brought in line with changes occurring other states. In particular, net metered systems should transition from a tightly regulated, yet preferenced generation resource, to one that stands on its own two feet and has the ability to take advantage of market opportunities with fewer and more limited development constraints. In order for this to occur, the Board needs to transition the reimbursement and credit process by which net metered generation is "put" to the grid. Today, the month-to-month valuation of these net metered "puts" are valued at full retail rates, including generation, distribution, and surcharges. Rate Counsel believes these valuations need to be tied to the value of comparable, marginal generation being put to the overall grid at the same time as the net metered generation. Rate Counsel supports additional value being attributed to this net metered generation for certain additional benefits that it may have created (i.e., avoided distribution capacity, avoided transmission capacity, etc.) provided that these supplemental values are supported by reasonably quantified and documented estimates. These estimates should be "netted" against any costs attributed to the net metered generation resource, at that particular location, and that particular hour of the day. Once net metered generation resources are valued at their true opportunity costs, then Rate Counsel believes that further discussions regarding individual system size limitations, or total capacity limitations can be held with a view towards potentially relaxing many of these current restrictions.

- ii. **Currently, net metered installations in New Jersey are restricted in size based on historic annual electricity consumption. Should there be an overall capacity cap for net metered project sizing? If so, how should it be structured?**

Response:

Rate Counsel does not believe size restrictions on individual installations, nor total EDC system installations, should be changed until such time that the current reimbursement methods for net metering output are changed. Net metered systems need to be reimbursed for all output at levels that represent the value of that energy, and any relevant capacity, avoided in the hour in which it is placed to the grid. This includes net metering output month-to-month valuations as well as overall annual evaluations for reimbursement purposes. The Board should not consider lifting any current size or total installed capacity restrictions until these net metering valuations are in line with market valuations. Rate Counsel sees these individual size and capacity installation restrictions not as barriers to solar market development, but as valuable ratepayer protections that limit ratepayer exposure to the large per unit subsidies that can arise with a full retail rate-based reimbursement process. These ratepayer protections (individual size, total capacity restrictions) need to remain in place as long as net metered systems are receiving such large additional subsidies through their net metering reimbursements or credits. If the net metering subsidies are lowered, then changes can be considered.

- iii. Should larger C&I sized solar projects be treated differently than residential projects due to their ability to crowd out smaller projects from interconnecting on constrained distribution circuits and their competitive advantage in the SREC market?**

Response:

As a general matter, Rate Counsel does not support any specific set-asides or special provisions for net metered C&I projects. Rate Counsel also sees no need to limit the development of these C&I projects provided that the net metering reimbursement process for their output is consistent with market valuations discussed in our prior response. Rate Counsel sees no other reason to limit the participation of these C&I systems without further evidence of this purported “crowding out” effect. Rate Counsel notes that it could also be the case that several C&I projects, particularly those associated with large rooftop installations, could be impeded from development given current net metering sizing restrictions. The impact of these limitations, their implications for solar development, and the rate impacts and other operational impacts of relaxing these sizing limitations should be explored in more detail by the Board.

- iv. **Currently, net metered installations in New Jersey are compensated at the full retail value of electricity, including generation, delivery and variable rate surcharges on a monthly basis over an annualized period. Is full retail net metering still required for all customer-sited solar installations? Do utility scale customer-sited and “on-site generation” facilities still require full retail net metering to be cost effective?**

Response:

No. The Board should not continue to compensate net metering installations at full retail rates. The reimbursement of net metering at full retail rates is a legacy policy adopted by the Board, as well as many other state regulatory commissions, during a time period in which solar energy costs were exceptionally high and the installations of behind-the-meter solar were limited. Some of the earliest net metering policies date back to the early 1980s and correspond with similar policy initiatives being taken for large-scale non-utility generation in the wake of the adoption of the Public Utilities Regulatory Policies Act of 1978 (“PURPA”). Back then, and for several subsequent decades, valuing distribution level generation put to the grid under net metering programs, at full retail rates, was more expedient and less administratively difficult than attempting to determine a distribution level avoided cost (for output reimbursement purposes), particularly when the installations participating in these net metering programs were so limited. The world has changed dramatically since the early 1980s however, and the Board’s net metering policies should be updated to correspond with these changes.

At a minimum, the Board should consider modifying its net metering regulations so that net metering customers do not avoid non-by-passable charges such as the societal benefits charge. Net metering customers should contribute their fair share of these charges.

- v. **What is the impact on the distribution grid of additional installations of distributed solar facilities? If upgrades are needed beyond those required to be paid for by individual customer-generators, who should pay for them?**

Response:

Rate Counsel does not believe a generalized answer to this question can be provided at this time. The impact of distributed net metered systems will vary across the state depending upon the systems to which they are interconnected, as well as the individual lines and feeders to which these systems are interconnected. These costs could range from a small, to a very large amount on a per net metered installation basis. However, as a general matter, to the extent that a net metering system imposes a cost on the grid, those net metered systems should be required to pay for the costs of these impacts. Rates that are imposed on net metered systems, for the costs they impose on other non-solar distribution customers, should be quantified and documented.

- vi. **Have the aggregated net metering rules been effective at motivating publicly sited solar generation facilities? If not, what changes could improve adoption?**

Response:

Rate Counsel is not clear about what is meant by “publicly sited” installations. If this means installations at public facilities (like schools, hospitals, prisons, etc.), then it is likely the case that solar installation decisions at these types of facilities are influenced by a variety of factors and that net metering policies are likely one of several factors influencing those solar siting decisions. It is also likely that the Board’s current net metering policies are of less importance for these public facilities than other factors such as budgeting constraints and financing barriers.

V. Land Use Implications:

- i. **How can the State minimize impact of solar development on open space, wooded, and farmlands?**

Response:

Rate Counsel has no position on this issue.

- ii. **In an effort to minimize the impact of solar development on open space, where and how should the State encourage solar development?**

Response:

Rate Counsel has no position on this issue.

- iii. **What changes to its policies, if any, should the Board consider related to its goal of protecting open space? Can tools like the NJDEP Solar Siting Analysis be used to inform incentive approval decisions? Should a condition of SREC eligibility for ground mounted solar facilities of a certain size include compliance with industry best practices such as those specified in rules promulgated by the State Agricultural Development Committee.**

Response:

Rate Counsel has no position on this issue.