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PSEG Services Corporation

July 1, 2013

BY ELECTRONIC AND OVERNIGHT DELIVERY

Kristi Izzo, Secretary
New Jersey Board of Public Utilities
44 South Clinton Avenue, 9th Floor
P.O. Box 350
Trenton, New Jersey 08625-0350
publiccomments@njcleanenergy.com

Re: **BPU Staff Request for Public Comment and Status of Proceeding to Investigate Approaches to Mitigate Solar Development Volatility**

Dear Secretary Izzo,

Please accept the following written comments on behalf of PSEG Energy Resources & Trade LLC ("PSEG ER&T") regarding Board Staff's request for comments to investigate approaches to mitigate solar development volatility. PSEG ER&T commends Board Staff for its determination to make New Jersey a leader in solar development. As a significant market participant, PSEG ER&T has been very supportive and appreciative of the Board's stewardship of the New Jersey Renewable Portfolio Standard ("RPS") over the past decade, and it congratulates the Board on achieving more than 1,050 MW of installed solar capacity to date.

PSEG ER&T recognizes that Board Staff is charged with conducting an investigation on approaches to mitigate solar development volatility and evaluate various alternative techniques for solar development, pursuant to N.J.S.A. 48:3-87(d)(3)(b). PSEG ER&T looks forward to working closely with Staff and Rutgers' Center for Energy, Economic & Environmental Policy ("CEEEP") as they begin this investigation.

As that process unfolds, PSEG ER&T would like to acknowledge current market conditions since the passage of the Solar Act of 2012 (the "Act"). Although the long term demand for New Jersey Solar Renewable Energy Certificates ("SRECs") was uncertain for much of 2012 as the market waited for potential passage of new legislation, it has since stabilized considerably. PSEG ER&T believes this stability to be the direct result of several key provisions of the Act, most notably:

1. Significant, near term increased demand of SRECs required as per a higher solar Renewable Portfolio Standard ("RPS");
2. Increased eligible life of SRECs from three to five years; and
3. Lowering of the Solar Alternative Compliance Payments schedule in Energy Years 2014 through 2028.

Since the beginning of this year, NJ SREC prices have transacted in a narrow range between $120 and $140/SREC, and monthly development as reported by the Office of Clean Energy has averaged more than 24 MW's of newly installed solar per month. By all measures, solar development is responding to the increased requirements of the Act, and the state continues to move forward in meeting its solar RPS goals.

Given these facts, PSEG ER&T believes that increased market transparency, with more reliable and accurate information on solar projects being made available to market participants, would help to lower solar development volatility. Additionally, PSEG ER&T believes that recognizing all of the recent significant legislative and regulatory developments, at this point maintaining a stable regulatory environment by limiting any near term regulatory changes to the solar program, would further lower volatility, continue to improve confidence in the market and thus provide long lasting positive benefits to the State and its environmental goals.

PSEG ER&T appreciates this opportunity to provide comments, and looks forward to continuing to work with Board Staff in its efforts to achieve New Jersey's Energy Master Plan goals.

Respectfully submitted,

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APPROACHES TO MITIGATE SOLAR DEVELOPMENT VOLATILITY

Solar development volatility has actually been present since 2009 with growth in solar generation capacity soaring from 127 MW to 1,078 MW through the end of EY 2013. One would expect marked volatility of solar development in progressing from a small base of installed solar generation capacity to that which was necessary to attain the Renewable Portfolio Standard (prior to the passage of the Solar Act 2012). Solar development volatility gained visibility as an issue resulting from a transition of the market from SREC scarcity to SREC surplus that occurred over the recent two years in satisfying the demand dictated by the RPS.

Volatility will never be completely eliminated in any market but it may be managed prudently through influencing or controlling those factors that define the solar market in NJ. The solar market encompasses the solar developers, purchasers of SREC's, sources of financing, regulators, legislators and utilities. What is volatility? The discussion about volatility is really centered on the rate of installed solar capacity over time and the best approach to controlling the volatility within agreed-upon bounds. Volatility becomes more pronounced in its influence and impact and elevates risk when the magnitude affects go-no go decisions to invest and frequency of changes occurs in shorter time periods than completion of a solar system installation cycle. The more effective and least disruptive approach to influencing solar development volatility for project developers and ratepayers is to intercede during the investment decision-making stage. Prudent and rational investment decisions for each asset owner will be made given a sufficiently complete and accurate understanding of the market, project costs and project timeline. Each prospective investor will apply this information to his/her own future projections of solar capacity, SREC pricing and financial criteria to make the appropriate decision to invest or not.

Solar development increases ranged from 50% to 120% per year during the period of 2007-2012. Driving force that contributed to this growth phase of rapid investment and buildup in solar system generation was the economic margin attributable to the solar alternative compliance payment and decreasing solar installation costs in a market of SREC scarcity. In an environment of scarcity, the SREC market price floated to the ceiling price, the solar alternative compliance payment. The economic margin between the SACP and the total installed cost per watt of capacity encouraged a high rate of capital investment. Information about critical aspects of the market was imperfect or unknown to the decision makers during this period. The result was that the market overshot the SREC requirements and triggered a rapid decline in SREC pricing as supply exceeded demand.

The scenario that unfolded with the SREC market in NJ is analogous to a process that is being brought under control with a controller whose settings are too low. A controller with settings that are too low will not react quickly or intensely enough to enable the process to reach steady state quickly and with minimal fluctuations (volatility). The process tends to overshoot its steady state point by a considerable amount. The controller over-adjusts the process equipment behavior to compensate for the overshoot in bringing the process to its steady state point and the process then undershoots. With each cycle of overshooting and undershooting, the variance decreases until the process settles at the steady state value dictated by the controller. The process will remain at the steady state value until the next disturbance, but the approach in reaching it introduced a lot of unpredictable variability.

Solar development reacts to market signals. These market signals are the inputs to the "controller".

- What are the inputs to the "controller"?
  - #1 - Information about the pipeline of projects
  - #2 - Available and affordable project financing
  - #3 - Economic incentive or margin between total installed costs and revenues of which SREC's constitute a major component.

- How to program the "controller" settings so that the volatility or variability in the solar development process is managed within established bounds to contain risk?

To answer these questions, one has to acknowledge the structure of the solar market. Over the past 1-1/2 years, the monthly installed solar generation capacity has ranged from 20-30 MW. The growth in grid-connected solar projects has been rather lumpy on a month-month basis and achieved an annual increase of approximately 35 MW over this 1-1/2 year period. Behind-the-meter growth has been relatively steady on a month-month basis and represents about 90% of the total contribution in solar capacity. Identifying potential new investments in behind-the-meter solar systems and when those capacities would become operational has become more granular due to the enforced requirements of the solar registration process and a more predictable expectation of the project timeline that drives milestones involving the EDC's. The OCE through its market manager and with input from the stakeholders has made remarkable progress over the past two years in bolstering the collection and reporting of this information. Tracking and reporting the progress of prospective grid-connected projects to date has not provided the necessary granularity for the same degree of insight.

The realization or cancellation of these grid-connected projects will have a profound impact on the projected capacity of solar generation simply because of the individual project scale. Whereas, the average size of a behind-the-meter project is approximately 40 KW, the average size of a grid-connected project has been approximately 2 MW. As of the end of EY 2013, 73% of the known pipeline of projects is comprised of grid-connected projects (excludes grid-connected projects in the PJM queue that have not yet completed the solar registration process). This represents 495 MW out of 677 MW total. The potential solar capacity of grid-connected projects can move the SREC supply-demand equilibrium forward by up to 2 years if these projects are not constructed. Furthermore, from the recent evaluation of grid-connected projects that applied for approval under section S of the Solar Act, only approximately 30 MW satisfied the requirements with many others revealing substantial shortfalls in progress to obtain necessary permits.

Collecting and reporting more comprehensive information about grid-connected projects is vital input #1 of the "controller" and into greater confidence about making rational investment decisions. Specifically, highlighting the status of grid-connected projects according to these suggested milestones is the mechanism to program the "controller" for input #1:

- Land Use Permit
  - Not Needed, Submitted, Obtained/Denied
- Zoning Variance
  - Not Needed, Submitted, Obtained/Denied
- DEP Involvement – Wetlands, CAFRA, Etc.
  - Not Needed, Submitted, Obtained/Denied
- Planning Board Approval of Design
  - Not Needed, Submitted, Obtained/Denied
- Interconnection Permit
  - Submitted, Obtained/Denied

Also, there are proposed PJM queue-listed grid-connected projects seeking interconnection permits that have not yet registered through the solar registration process. It is essential that the market participants be made aware of the potential capacity these projects represent.

Utility-sponsored financing and reverse SREC auctions lower the barriers to participation for property owners and project developers with limited financial resources and business track records. This ensures that all classes of ratepayers can continue to participate in solar development in NJ. This is input #2 of the "controller". Stabilizing the availability of utility-sponsored financing and conducting regular periodic reverse SREC auctions constitute the programming for "controller" input #2.

Correlating the Solar Alternative Compliance Payment with a declining total installed solar system cost represents input #3 of the "controller". Periodic adjustment of the SACP profile that will support a targeted threshold rate of return modulates volatility and provides the programming for input #3 of the "controller". The SACP adjustment will preclude a margin from widening that will accelerate the pace of solar investment leading to significant solar development volatility. The frequency of adjustment will depend on the rate at which total installed solar system costs change. This will require on-going monitoring. To be effective, this tool will need to be shifted from a purely legislative mandate on pricing as it exists today to legislative-enacted prescriptive language to which price settings through regulatory action would adhere.

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Comments on Mitigating Solar Development Volatility

SRECTrade appreciates this opportunity to provide these comments on mitigating solar development volatility in NJ.

New Jersey chose to take the path of a solar renewable energy credit (SREC) based market approach to incentivizing solar development in New Jersey. We believe that changes to this program must be viewed holistically, with SRECs as merely one component. Above all, the goal that 4.1% of NJ's electricity from the sun with minimal ratepayer impact should drive the conversation. Based simply on market design, prolonged low SREC prices should eventually result in decreases in solar installation. Common sense dictates that a system with multi-year cycles that repeatedly bringing the installation rate to near zero for a long enough period of time to bankrupt the solar installation and financing industry is counterproductive to the overall goal of reaching the target installation rate at minimum cost. Therefore we believe it is unnecessary to spend time debating if we should be mitigating SREC market volatility, build rate volatility, or some other measure of volatility. Instead we should examine potential alternatives that reduce the length of the cycles inherent in a market based system to the point that a sustainable industry can exist.

One of the major benefits of an SREC system is that the market determines the price necessary to incentivize solar and the program is self-correcting to over and under build situations. Unfortunately, program design has significant impact on how long it takes this self-correcting mechanism to work. SRECTrade recommends a series of changes to the state's SREC program that all serve to shorten the inherent self-correcting mechanism of the SREC market. In effect, embracing the volatility of a market based system but shortening the cycle so that the ecosystem of solar developers and financiers can work within it.

Shorten the Compliance Period

SREC markets are fundamentally based on the concept that the market price of SRECs sends price signals to developers: increase or decrease development based on the price of SRECs. The current system of annual compliance periods with a 3 month true-up period leads to a needless lag of up to 15 months between when June SRECs are generated and when a compliance buyer actually has to purchase those SRECs to meet their compliance obligation. The unnecessary one month lag between electricity generation and SREC generation by PJM-GATS only adds to this problem. Taken together, this stale pricing leads to developers making decisions on price information which may be up to 19 months old.

A certain critique of this assertion will be that SREC production and build rates are available, and developers can use these as a proxy for price. We believe that this will always be a relatively poor proxy, primarily because there is no formula that coverts an SREC oversupply of X to a price of Y. SRECs are a market based system that operate on price signals, and it has been

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well established that markets respond to transactable prices far more readily than any number of forecasts and prognostications based on supply and demand.

As a result, we propose that LSE compliance obligations be determined quarterly, with a true-up required no more than 1 month after each quarterly compliance period ends. In addition, we propose that PJM-GATS be directed to switch to creating SREC without the current one month lag. We know this is possible because the original New Jersey SREC registry run by Clean Power Markets worked in this more intuitive and rational way. We are confident in the NJ BPU's ability to compel PJM-GATs to run the registry as directed by the BPU rather than as PJM-GATS decides they wish to operate.

Create a Responsive Compliance Obligation

The current renewable portfolio standard (RPS) law contains a fixed, administratively determined SREC obligation calendar which determines how many SRECs are required each year. This is a weak link in any market based system, because it is based only on the best information available at the time the RPS law was passed and is completely unresponsive to changes in the price of installing solar. It is now possible to install far more solar for the same price as originally envisioned by legislators, however the static compliance obligation calendar is completely unresponsive to this fact and requires constant legislative intervention.

There are several options for dealing with this shortcoming. One is to switch to a reactive compliance obligation modeled after the Massachusetts SREC program. This is a formula based program where the number of SRECs required next year is not fixed by schedule, but instead determined by the build rate this year. A high build rate in the current year is indicative of low installation prices, and as a result the next year's compliance obligation increase can be large without a detrimental impact on ratepayers. A low build rate in the current year indicates high installation prices, so the next year's compliance obligation step-up should be smaller to reflect this reality. In simplest formulaic terms, the formula would look like:

$$\text{SRECs Required}_{\text{(Next compliance year)}} = \text{SRECs Required}_{\text{(This compliance year)}} + 1.3 * (\text{SRECs Produced}_{\text{(This compliance year)}} - \text{SRECs Produced}_{\text{(last compliance year)}})$$

Various additional factors can be added, and the current year SREC production can be estimated ¾ of the way through the year in order to provide more certainly for SREC buyers, however these are all just second order adjustments to refine this powerful concept of an adaptive market.

Another option would be to allow the RPS requirement to automatically advance up to three years each year that the market is oversupplied by more than a pre-determined percentage, or weighted average SREC prices for a year fall below a pre-determined value.

These types of adaptive RPS standards again shorten the natural cycles of a market based SREC system. In addition, they use up to date market based data to determine the compliance obligation, not stale information that may be out of date by several years. If the goal is to generate 4.1% of the state's electricity by solar, this system allows the state to reach that goal at the fastest speed and minimal cost, without setting arbitrary dates with little if any relation to the current day's economics of solar.

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Finally, we would like to propose that additional solar requirements be added if it is beneficial to ratepayers to do so. Studies like the November 5th, 2012 Clean Power Research study of New Jersey and Pennsylvania (http://mseia.net/site/wp-content/uploads/2012/05/MSEIA-Final-Benefits-of-Solar-Report-2012-11-01.pdf) have shown that increased solar generation depresses locational marginal pricing for all ratepayers and provides capacity value which net metered solar facilities are currently not compensated for in any way by PJM or their local EDC. Together these may exceed or at least significantly reduce the impact to ratepayers of the SREC cost. We believe that an annual computation of the monetary benefits of solar be conducted, and as long as the weighted average price of SRECs over the past year was lower than this monetary benefit, the RPS standard should automatically be stepped up by a significant fixed amount, 25% for example. Under this type of program, increased solar results in *decreased* cost to ratepayers, plus significant non-monetary benefits to all residents of the state, so each additional MW of solar makes ratepayers financially better off, even with the price of SRECs factored in. Obviously this system would have to ensure grid stability, however given that Germany has been able to provide up to 50% of its electricity from solar power and still provide more stable power than the U.S., grid stability caps should be significantly higher than currently envisioned in the RPS law.

Sincerely,

Kevin Quilliam
President, SRECTrade

In the Matter of the Implementation of L. 2012, c. 24, N.J.S.A. 48:3-87(d)(3)(b)
A Proceeding to Investigate Approaches to Mitigate Solar Development Volatility,
BPU Docket No. EO12090860V
OCE Request for Comments Issued June 11, 2013

Comments of the New Jersey Division of Rate Counsel

July 1, 2013

1. Introduction

Rate Counsel appreciates the opportunity to provide comments to the Office of Clean Energy ("OCE") pursuant to the requirements of Solar Energy Act ("SEA") (P.L. 2012, c. 24) directing the Board to complete a proceeding to investigate approaches to mitigate solar development volatility:

> No more than 24 months following the date of enactment of P.L. 2012, c.24, the board shall complete a proceeding to investigate approaches to mitigate solar development volatility and prepare and submit, pursuant to section 2 of P.L. 1991, c.164 (C.52:14-19.1), a report to the Legislature, detailing its findings and recommendations. As part of the proceeding, the board shall evaluate other techniques used nationally and internationally.[1]

Although this legislation may have stemmed from the rapid development of New Jersey solar markets over the past two years, and consequent drop in the price for Solar Renewable Energy Certificates ("SRECs"), such developments are not a "bad" thing necessitating some form of new Board action or initiative under the SEA. Rate Counsel, in fact, sees recent solar market outcomes in the opposite: they are the result of increased productivity, technological innovation, market forces, and equally important, Board policies over the past several years. One need only review where New Jersey solar markets were prior to the Board's market re-design to understand and appreciate what can only be interpreted as positive, not negative nor "volatile" outcomes.

[1] See, N.J.S.A. 48:3-87(d)(3)(b).

Consider that prior to a period as recently as 2012, New Jersey's solar energy markets were falling short of the Board's solar Renewable Portfolio Standards ("RPS") requirements. Figure 1 provides a chart comparing the Board's annual solar energy requirements versus actual solar generation. Prior to 2012, the shortfall between the Board's solar energy requirements and the actual SRECs surrendered for compliance purposes during this time period were met with Solar Alternative Compliance Payments ("SACPs").

	Solar RPS Requirement	Eligible SRECs	Surplus/ (Shortage)
	----------------	(MWh)	----------------
EY 2010	171,095	133,771	(37,324)
EY 2011	306,000	285,092	(20,908)
EY 2012	442,000	717,888	275,888
EY 2013	596,000	1,054,949	458,949

Figure 1:Comparison of Historical SREC Availability and New Jersey Solar RPS
Source: New Jersey Office of Clean Energy, and PJMGATs

Solar energy market shortfalls, coupled with the purchase of relatively higher cost SACPs, drove up the overall average price of solar energy compliance during the time period leading up to the Energy Year ("EY") 2012. This increase in costs was borne by ratepayers in their monthly electricity bills. Market clearing prices for SRECs, for example, increased to levels very close to their "capped" price as reflected by the SACP. Figure 2 shows the historic trend between SREC and SACP prices, including those seen during this time period. SREC prices, reflecting market scarcity of the period, consistently traded within 20 percent of the SACP, and even reached a level some 95 percent of SACP from June, 2010 through August of 2010.

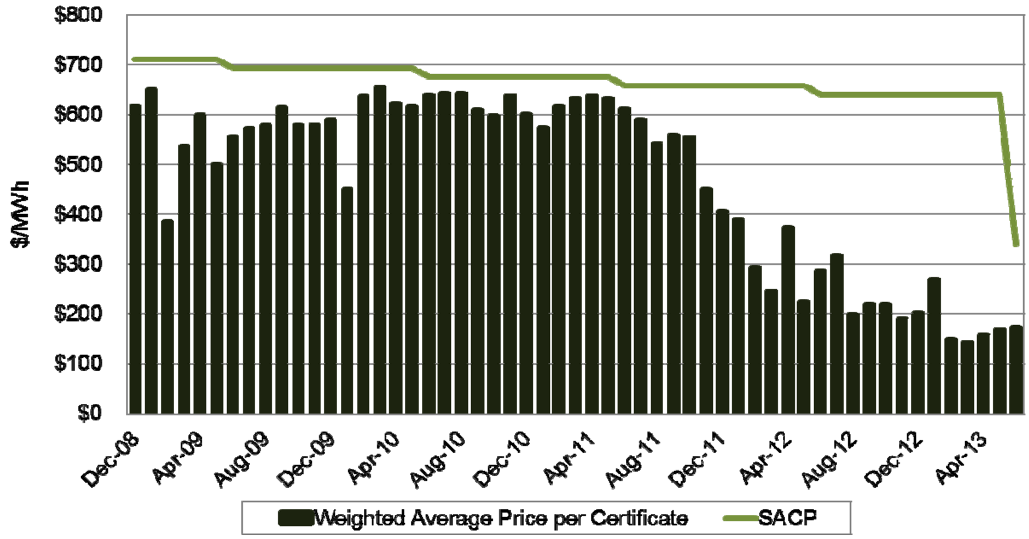

Figure 2: Comparison of Historical SREC Prices to SACPs

Source: PJM Generation Attribute Tracking System (GATS); New Jersey Office of Clean Energy; and Decision, BPU Docket No. EO06100744 (Dec. 6, 2007).

Now all this has changed. The rapid development of solar installations, driven in large part by a significant decrease in solar energy systems costs, has made solar more affordable to more households, businesses, and industries. This should come as no surprise since the first law of demand in any basic economics principles text is that quantity demanded of a good or service, like solar energy, will increase as the price of that good or service decreases. This is exactly what has happened over the past two years: the cost of installing solar has fallen and this fact, coupled with generous tax credits and a stable in-state market for trading SRECs, has led to a sustained increase in installations.

More importantly, ratepayers are seeing the benefits of the financial support they have provided for the Board's and the State's solar energy policies: installations are up, the solar RPS is being met, and the cost of solar compliance (i.e., SRECs) is down. Now is not the time to effectively pull the rug out, and change the rules of the game, in solar energy development that would raise the cost, and actually increase "volatility" in solar energy markets. Rate Counsel respectfully suggests that OCE and the Board keep three facts in mind while considering this issue of "volatility" as referenced in the recently-passed Solar Energy Act.

First, there is a distinct and important difference between SREC price volatility, on the one hand, and solar installation volatility, on the other. The Solar Energy Act explicitly references "solar development volatility" and did not reference SREC prices. Other parties' attempts to read differing interpretations, or legislative intent, into this portion of the statue should be rejected. The Board should focus on the plain meaning explicit within the four corners of the legislation, and nothing more.

Second, several years ago the Board undertook a considerable initiative of re-designing New Jersey solar energy market design to one that moved away from a rebate-based approach to one that was more market oriented. The Board expanded this market design to include other longer-term mechanisms such as utility-financed programs that included direct utility investment as well as long-term SREC contracting. The express purpose of the initial and expanded market design was to create an environment of "regulatory certainty." Current proposals to change the existing market design moves away from the Board's prior goals of creating regulatory certainty, and will likely lead to unanticipated consequences that could like to greater, not less, market volatility.

Third, as mentioned above, the Board's past policies have focused on the reduction of regulatory risk associated with solar development. This is an appropriate policy focus since regulatory risk is something the Board understands, and is a form of risk in which it has a certain degree of control. The Board should not, however, attempt to develop policies that attempt to reduce or eliminate all forms of risks, including business and financial risk, associated with solar development. The Board cannot insulate solar developers from such risks without creating injury to the credibility of its overall solar energy policies, particularly those associated with the development of a competitive market structure for renewable energy. Businesses must face some risk, and their commensurate opportunities for return, in order for renewable energy markets to remain robust and competitive. Rushing in to change policies each and every time solar markets change is simply counterproductive and something the Board should seek to avoid.

The following sections will first summarize the recent developments, including measures to stabilize the solar energy market that were enacted in the SEA, and explain why further policies intended to manage the market would be ill advised. These comments will also analyze the volatility of New Jersey's SREC and solar developments market, and show that these markets are not excessively volatile, and in fact are no more volatile than other energy markets. Finally, these comments will present Rate Counsel's responses to comments filed to date by other stakeholders.

2. Recent Changes in Solar Energy Markets

Solar markets have changed considerably since the time of the Board's Generic Proceeding re-defining New Jersey's solar market design.[2] The most important has been a reversal of the consistent under-investment trend that was occurring during, and prior to, the Generic Proceeding. While the Board's actions likely had some positive influence on reducing regulatory uncertainty and improving solar installations relative to

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[2] I/M/O the Renewable Energy Portfolio Standard—Alternative Compliance Payments and Solar Alternative Compliance Payments, BPU Dkt. No. EO06100744, Decision and Order at 2 (Dec. 6, 2007)

the RPS goals, there were a number of other market changes that had equally important impacts.

For instance, there were a number of external market changes starting in 2008 that ultimately set up a supply-demand mismatch in solar markets not uncommon to many other capital-intensive energy markets. Since 2008, the “demand” side of the market, comprised of the demand for solar energy (i.e., SRECs), has declined while the “supply” side of the market, consisting of the provision of SRECs and driven by both existing and new solar installations, has increased.

On the demand side, the great economic recession of 2008 led to a significant reduction in electricity demand as seen in Figure 3. This resulted in a significant reduction in the need for SRECs, since most solar RPS requirements and other similar mandates - in New Jersey as well as other places around the world - are driven primarily by formulae tied to some percentage of electricity sales or generation. European solar markets also saw significant cut-backs in solar energy demand as many government-supported subsidies, primarily in the form of feed-in-tariffs, were reduced in the face of the European financial crises and a recognition that in many countries, like Spain and Germany, these administratively-determined incentives were likely too generous.[3]

[3]See Elena Ares, Oliver Hawkins, and Paul Bolton. (2012). Feed-in Tariffs: Solar PV Review. London: British House of Commons Library, Science and Environmental Section.

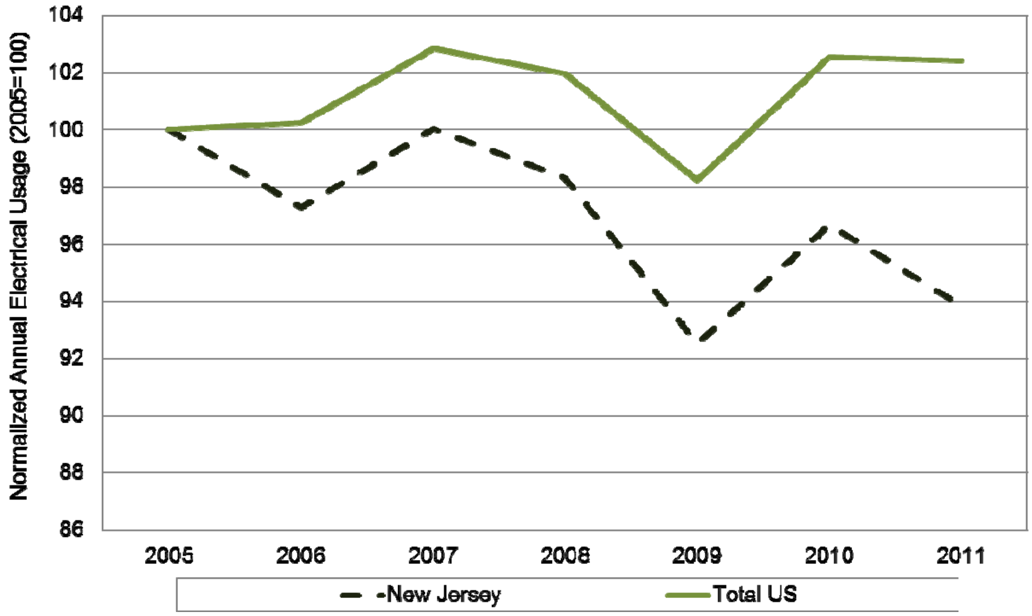

Figure 3: New Jersey and US Annual Electrical Usage (2005-2011)
Source: Department of Energy, Energy Information Administration

The supply side of the solar market (i.e., solar installations or “development”) has perhaps seen the more dramatic changes over the past several years. Solar panel manufacturing sector has increased considerably over the past several years, fueled in large part by the growth in solar generation mandates, set-asides, and financial incentives in the United States and abroad. This growth likely put the solar panel manufacturing sector in a position to oversupply the market even absent of the recession-induced contractions in solar mandate requirements. The global economic contractions, combined with the increase in solar panel manufacturing, has led to a considerable reduction in the price of solar installation, and consequently, a significant increase in the demand for solar installations.

Over time, these types of excess supply situations are typically corrected by either a significant reduction in supply (i.e., SRECs) or a significant increase in demand (i.e., the solar RPS or mandate), or, in some instances, a combination of both. There is no reason to believe that the current, relatively short-term increases seen in solar installations, and their corresponding decreases in SREC prices, will not find some corrective equilibrium, assuming, as will be shown later, that this has not already occurred.

OCE and the Board also need to keep in mind that the SEA itself was designed to directly address the supply-demand mismatch that has recently arisen in New Jersey's solar energy markets and that additional actions may not be necessary. The effective purpose of the SEA was to "rebalance" the excess supply in the New Jersey solar market. The SEA attempts to accomplish this goal by increasing the solar RPS requirement from its prior level (i.e., the demand for SRECs) in the years between 2013 and 2022 (representing Energy Years 2014 through 2023), with a corresponding reduction in the solar RPS requirement in the years subsequent to Energy Year ("EY") 2023.[4] Overall, the SEA increases the net New Jersey SREC requirement by some 38 percent (3.9 million SRECs) over the next 15 years. A comparison of the old and new solar RPS requirement has been provided in Figure 4.

[4] See, P.L. 2012, c. 24 §38 subsection (d)(3).

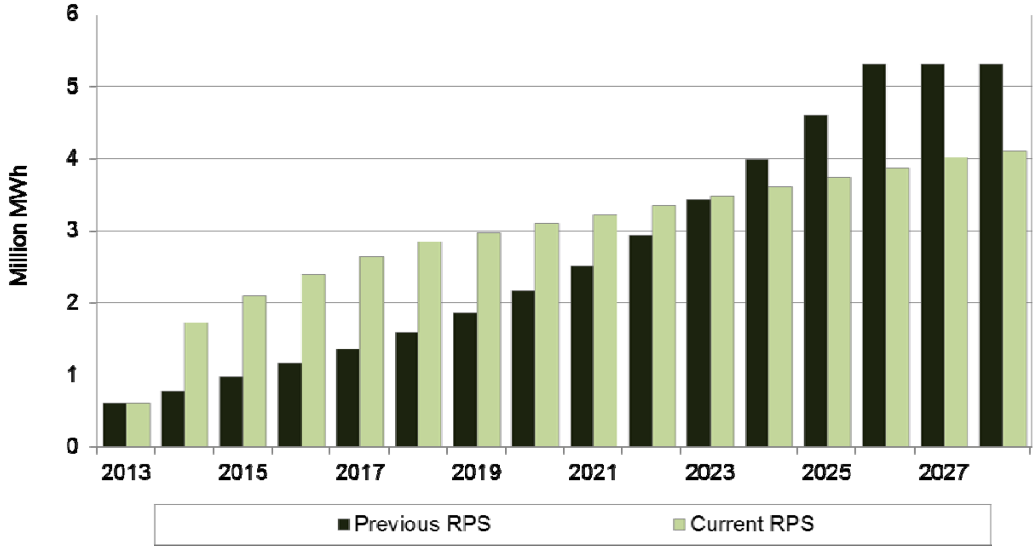

Figure 4:Comparison of Current and Prior Solar RPS Requirements
Source: New Jersey Office of Clean Energy, Solar Market FAQs.

The quid pro quo for ratepayers in the SEA is the longer term reduction in the SACP after 2014. For instance, the Board's prior SACP schedule included an EY2014 SACP price of $625, decreasing moderately to end in EY2026 at an SACP level of $377.[5] The Board's prior SACP schedule would reduce the maximum compliance price in New Jersey solar markets by some 3 percent per year over this thirteen year period.[6] The new SEA sets the revised EY2014 SACP level at $339, a full 45.8 percent reduction from the prior year level. SACP prices are then required to decrease at an annual average rate of approximately 2.5 percent until EY2028 where the SACP will be set at $239.[7] The SEA also offers, importantly, something additional provided to solar developers in this ratepayer quid pro quo: while the ceiling prices for SRECs (as represented by the SACP) have been forced downwards, the legislation creates a very long-term schedule for maximum solar energy prices that did not exist heretofore.

[5] Order, BPU Docket EO01190527V, pg. 3.
[6] Id.
[7] P.L. 2012, c. 24 §38 subsection j.

The SEA is yet another example, in a series of instances, where the rules and laws governing the solar industry have been changed in order to correct perceived market deficiencies. Further, an important prior Board-approved ratepayer protection, that is, a freeze in any annual increases in the solar RPS if rate impacts exceeded a threshold level, was removed by the SEA. All of these SEA concessions (backstopping by ratepayers, the provision of a mandated long-term SACP schedule, and removal of the rate impact cap) need to be considered by the Board in its review of any changes or new programs addressing what some refer to as "volatility" in solar energy markets. The SEA already provides a number of remedies to address the recent supply-demand imbalance in solar energy markets, and the Board should not rush to undertake any new policy that would add to the concessions already imposed on ratepayers under the SEA. As is explained in the following sections, additional Board policies intended to change the market further could increase uncertainty or establish unreasonable expectations in the market, and are not needed to address "volatility".

3. Bad Precedents that Could be Established by Modifying the Current Solar Market Design

Initially, Rate Counsel must express its concern with the view that the solar market should be actively managed by the Board. This view was recently expressed in the Combined Heat and Power Portfolio Standard ("CHP-PS") proposal circulated by Staff to the Combined Heat and Power ("CHP") Working Group.[8] Rate Counsel has previously submitted comments to Staff regarding its strong disagreement with this course of action,[9] a position which is shared by many other stakeholders.[10] Within the

[8]Combined Heat and Power Long Term Financing Incentive Mechanism; A "smart" Portfolio Standard (April 15, 2013), New Jersey Office of Clean Energy.

[9] Comments of New Jersey Division of Rate Counsel (May 30, 2013) on proposed CHP-PS.

CHP-PS, Staff proposed what it referred to as a "smart" portfolio standard, where the Board would have the ability to change the portfolio standard for CHP each year depending on the levels obtained in previous years. Staff stated the following in its CHP-PS proposal, and although its concerns expressed in the cited document is rather muted, it should be noted that at meetings Staff lamented that the Solar RPS was set through statute and thus was out of the reach of the Board to modify, resulting in a "vertical demand curve" for SREC. In particular, Staff noted:

> Basically this process of a more directly managed CHP PS would minimize or eliminate the vertical demand curve that impacts the RPS competitive markets in New Jersey. Competitive market based RPS system could result in big swings in the value of the certificates because of market responses to supply and demand. Because of the tens of thousands of potential customers in the solar market, the solar certificate value changes can be addressed more readily through market forces. Because of the limited number of customers currently in the CHP field this market would benefit initially through a more managed market. This regulated management could change with the implementation of cost effective micro-CHP. At that point the CHP PS market could look more like a solar market for residential and small business market segments.[11]

Consistent with the whole of these comments, Rate Counsel rejects the idea that the SREC market is somehow flawed because of the presence of a "vertical" demand for SRECs under the RPS. A "vertical demand curve" means only that the demand for SREC is primarily set by policy makers, and is inelastic with respect to price. Price inelasticity is an inherent feature of all market that are driven by public policy and is not a flaw that needs to be remedied. Rate Counsel also certainly rejects the notion that

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[10] See, generally, Re: BPU Staff Straw Proposal on CHP/EEPS (May 31, 2013), Jersey Central Power &Light; RE: BPU Staff CHP Portfolio Standard Straw Proposal (May 30, 2012), Public Service Electric &Gas; Re: Comments by Rockland Electric Company on Straw Proposal for Combined Heat and Power ("CHP") Long Term Financing Incentive Mechanism, A "Smart" Portfolio Standard (May 30, 2012), Orange & Rockland; and RE: CHP Portfolio Standard (May 30, 2013), New Jersey Business & Industry Association.

[11] Combined Heat and Power Long Term Financing Incentive Mechanism; A "smart" Portfolio Standard (April 15, 2013), New Jersey Office of Clean Energy, p. 3.

possessing the ability to modify RPS requirements year-to-year would do anything but damage the New Jersey solar market. The very functionality of a compliance market hinges on the ability of market participants to have rational expectations for the balance of supply and demand into the future. Allowing the RPS requirements to change ad hoc would destroy any ability of solar developers to predict the feasibility of solar projects which will take six months or more to complete. This would clearly add uncertainty and risk to the market, driving up financing costs and ultimately reducing private development of solar generation within the State.

4. Neither the SREC Market Nor the Solar Development Market in New Jersey is Excessively Volatile.

Volatility can be defined as the increasing and decreasing movement of a particular empirical series: such movements are commonly associated with risk. Volatility can arise due to a number of different factors such as seasonality, movement in the economy, speculative behavior, market power, regulatory or legislative changes, or changes in consumer tastes and preferences. Some factors that lead to volatility can be reasonably estimated (such as seasonality or sensitivity to economic factors) while others are less predictable.

It is important that OCE and the Board distinguish between **SREC price volatility** and **solar development volatility**. SREC price volatility should be defined as a situation where SREC prices are observed to move in a dramatic up and down fashion. Solar development volatility should be defined as a situation where solar development (number of installations) is observed to be varying in a dramatic up and down fashion. As will be shown later, while SREC prices have seen some price volatility over the past two years, that volatility was restricted and appears to have already dissipated. Likewise, the New Jersey solar market has seen some volatility in development trends, but this volatility has actually fallen in recent years.

Volatility can be measured in a number of ways. A visual inspection of the trends in a particular series can be one somewhat simple method for examining series volatility, and appears to be the method employed by many stakeholders participating in this proceeding. Estimating the standard deviation[12] of a particular series, i.e., its variability or dispersion from its average value, is a slightly more rigorous approach to evaluating the volatility of a particular empirical series. Even more rigorous, and perhaps more appropriate, would be to estimate what is referred to as the "coefficient of variation" (or "CV") of a particular empirical series to determine is "volatility."

The CV is a statistical measure that is defined as the ratio of the standard deviation of a particular series relative to its mean.[13] In absolute value a CV measure that is less than one indicates that the standard deviation of a series is less than its mean where as a series with CV measure greater than one can be thought of as one where the standard deviation is greater than the mean. A series showing a CV less than 2.0 or 1.5 cannot be thought of as one indicating a high degree of "volatility." A CV of 1.5 indicates that the series variation is 1.5 times the mean, whereas a CV of 2.0 indicates that the series variation is 2.0 times its average value.

[12]The standard deviation is a measure employed in statistics and mathematical probability theory that estimates the variability or dispersion of a particular series from its average value (also known as the "mean value" or "expected value"). A low measure of a standard deviation entails low variation (or dispersion about the mean) while a high standard deviation can be thought of as representing a large dispersion in a data series.

[13]The measure is often thought of as the relative dispersion of a given series, or its unitized risk since the measure of dispersion (the standard deviation) is divided by the mean of the series. The CV can be expressed in percentage terms if the coefficient is multiplied by 100. See, Douglas A. Lind, William G. Marchal, and Samuel A. Wathem (2005). Statistical Techniques in Statistics and Economics. New York (McGraw, Hill, Irwin): 112-113.

Figure 5 shows the weighted average SREC trading prices in comparison to the SACP. For the period December 2008 to March 2011, SRECs traded in a very narrow range in comparison to the price cap set by the SACP. Market volatility during this time frame was also low, with a CV of 0.10 meaning that the variation in data during this period was about 10 percent of the average SREC price reported during this time period. In the second half of 2011 and first half of 2012, SRECs saw a significant decline of 61.6 percent, falling from $638.17 in April 2011 to $245.04 in March 2012. Market volatility during this period also increased slightly, with a CV of 0.27 during this time period. Yet even this increased measure of volatility is relatively tame, being measured at around 27 percent of the average SREC price.

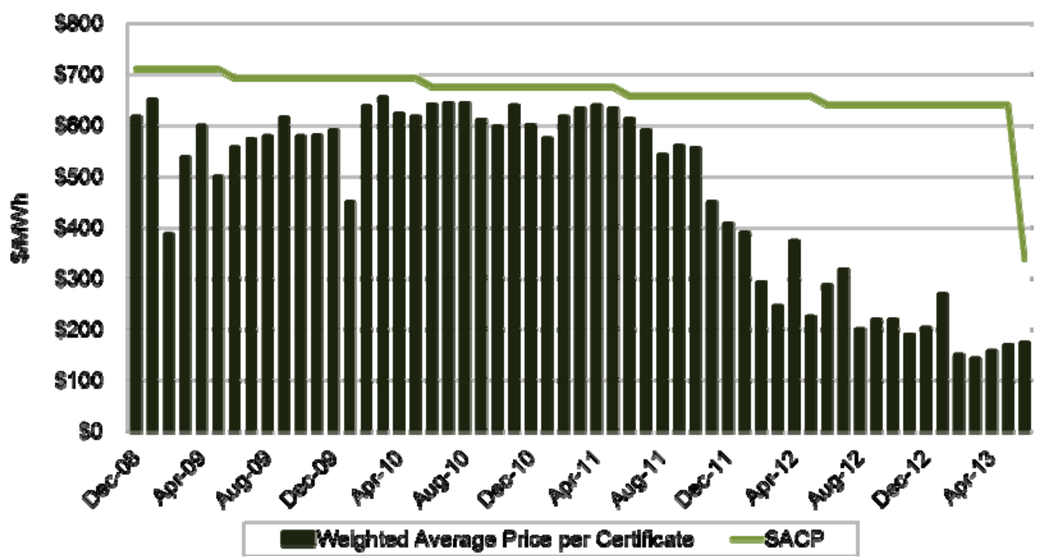

Figure 5: Comparison of Historical SREC Prices to SACPs
Source: PJM Generation Attribute Tracking System (GATS); New Jersey Office of Clean Energy; and Decision, BPU Docket No. EO06100744.

Moreover, in the period following this sharp decline, the market has quickly stabilized, albeit at a much lower price. Subsequent to April 2012 the market for SRECs has remained at or near $245 per SREC, with a high of $316.36 in July 2012 and a low of $142.21 in March 2013. Market volatility has also stabilized, with a CV during this time frame of 0.25, or roughly the same as seen in the period of April 2011 to April 2012. Thus it is difficult to suggest that SREC prices reflect a consistently high degree of "volatility" when measured from a unitized risk perspective.

This result is reinforced when examining the trading prices for each energy year 2009 to 2013 on an individual basis as shown in Figure 6 below. The period between EY2011 and EY2012 was a transitional time as the market was moving from having insufficient solar generation to cover the requirements of the RPS, to having an abundance of solar generation.

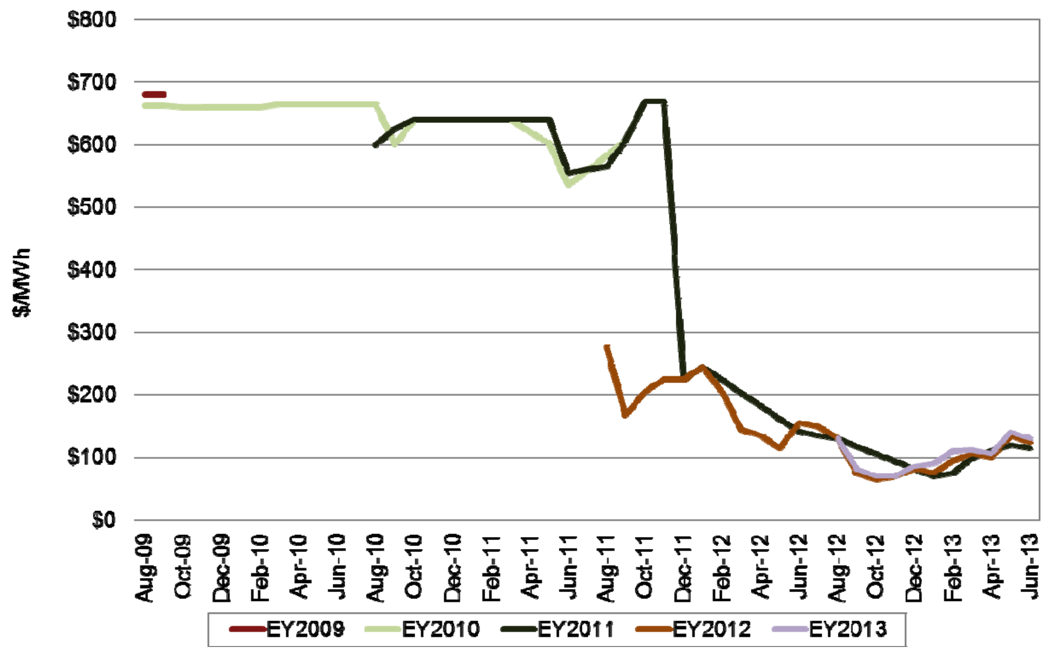

Figure 6, Monthly SREC Auction Clearing Price per Energy Year
Source: SRECTrade.com, NJ Auction Price as of June 24, 2013.

While solar development (or installation) trends show slightly higher variations than SREC prices, the overall trends are comparable and do not rise in any fashion to something that could be defined as being "volatile." Figure 7 below shows the monthly incremental megawatt solar capacity installed between March 2007and May 2013. A visual inspection of the chart might suggest that the series is relatively volatile since it shows several sharp increases and decreases in monthly installations in the post-November 2010 time period.

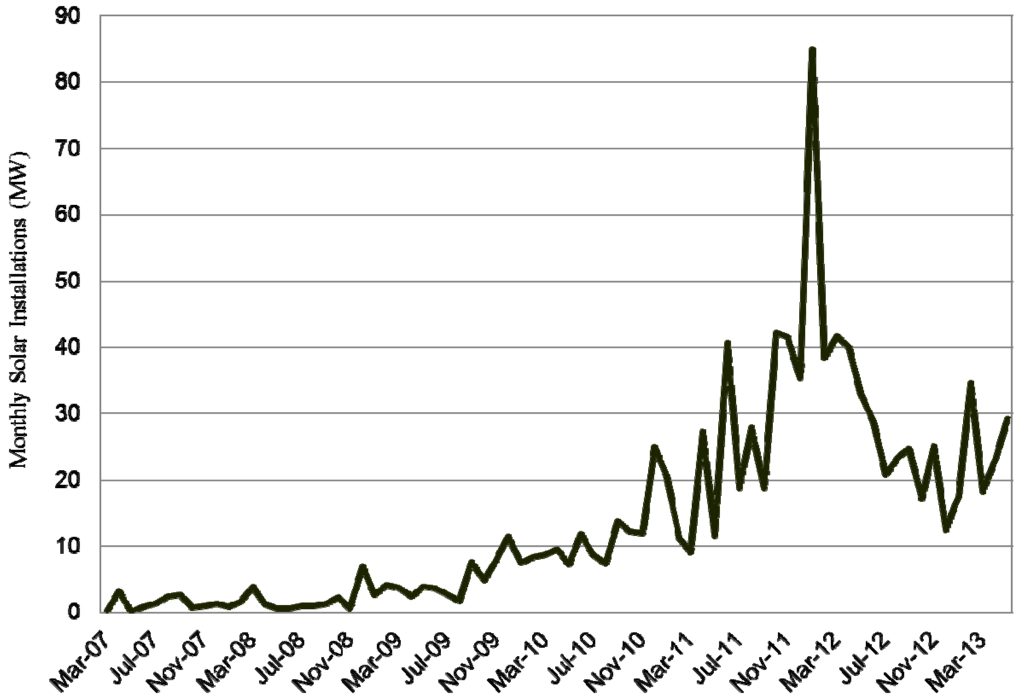

Figure 7: Monthly Solar Installations (MW)
Source: New Jersey Office of Clean Energy

The CV for the entire solar development monthly installation series is 1.1 indicating a standard deviation, or measure of dispersion that is slightly greater than the average monthly installation rate during the course of the entire series. For instance, average solar installations since March 2007 is about 13.5 MW whereas the standard deviation for the entire period is 15.0 MW on a monthly basis. These numbers, however, are likely skewed by the huge and obvious monthly installation outlier in November 2011 of 85 MWs.

This data point (January 2011) is an obvious and statistically significant outlier and needs to be removed from both a statistical and policy analysis perspective. From a statistical perspective, the observation clearly biases the average monthly installation estimates as well as the CV. A statistical test for the significance of this outlier suggests that it can be rejected at a 99 percent confidence level.[14] If this observation is removed, the average monthly installation rate drops to 12.65 MWs per month, and the CV is estimated for the entire series right at 1.0: indicating a monthly installation variability that is about equal to the monthly average.

The January 2011 observation should also be removed from a policy perspective since it represents a one-time event not likely to occur again. New Jersey solar development has never seen a monthly installation level this high, nor is it likely to see a level this high again. In fact, monthly installations have fallen considerably since that time period, to levels more similar to those observed pre-January 2011.

Equally noticeable from Figure 7 are two different monthly installation trends occurring before and after November 2010. Prior to this period, New Jersey solar markets saw monthly installations of around 2.6 MWs per month with a CV during this same period of about 0.95 – meaning that the variation in monthly installations was slightly less than the monthly average installation rate over that time period. In the post November 2010 period, the New Jersey solar market saw monthly installations of around 23 MWs per month with a CV that is much lower of around 0.64. In other words, unitized risk (or "volatility") during this period actually fell, not increased, post-November 2010.

Additionally, as noted earlier, the post-November 2010 period is dominated by a large outlier that biases the measurement of both the mean and the CV. If this one observation is removed, the average monthly installation levels fall to around 21.65

[14] A "Grubbs test" for this observation yields a test statistic of 4.6368, well above the 2.0 necessary for statistical significance.

MWs per month and a CV of 0.52 indicating considerably less variation than even the pre-November 2010 period. Thus, it is difficult to accept the conclusion reached by many solar developers in this proceeding that solar development markets have somehow become “more volatile.” Empirically (objectively) speaking, the market has become less, not more, volatile and needs no further policy modifications.

Several solar developers argue that the changing composition of the New Jersey solar project pipeline is indicative of volatility. Table 1 presents the composition of capacity moving within the New Jersey solar project pipeline on a monthly basis from August 2010 to April 2013. The pipeline saw a major increase in capacity from grid supply projects during the months of June and July 2012. This also corresponded to a large increase in the total capacity represented by projects in the pipeline capacity the same time period, increasing from 510,046 kW in April 2012 to 806,916 in August 2012, or 58.2 percent. As mentioned by other stakeholders, this large increase in grid supply projects was more than likely due to developers trying to complete projects on New Jersey farmland before the provision of the SEA that restricts the potential for large solar projects on farmland became effective. Again, this is likely a one-time event (outlier) that should not be utilized as support for any significant change in the Board’s solar market design or policies.

As of Month Ending	Capacity in Solar Project Pipeline			Precentage of Pipeline	
	Net Metered	Grid-Connected	Total	Net Metered	Grid-Connected
	---------------- (kW) ----------------			------ (%) ------	
Aug-10	134,513	5,425	139,938	96.12%	3.88%
Sep-10	203,753	17,609	221,363	92.04%	7.96%
Nov-10	174,630	40,903	215,533	81.02%	18.98%
Dec-10	162,501	41,851	204,352	79.52%	20.48%
Jan-11	181,096	38,675	219,771	82.40%	17.60%
Feb-11	239,016	34,431	273,446	87.41%	12.59%
Mar-11	276,387	28,099	304,486	90.77%	9.23%
Apr-11	301,217	28,099	329,315	91.47%	8.53%
May-11	389,524	28,099	417,623	93.27%	6.73%
Jun-11	417,601	27,184	444,785	93.89%	6.11%
Jul-11	385,310	80,011	465,321	82.81%	17.19%
Aug-11	400,943	140,292	541,235	74.08%	25.92%
Oct-11	418,315	153,362	571,677	73.17%	26.83%
Nov-11	419,566	179,810	599,376	70.00%	30.00%
Dec-11	446,467	172,250	618,717	72.16%	27.84%
Jan-12	418,561	129,407	547,968	76.38%	23.62%
Feb-12	406,246	136,069	542,315	74.91%	25.09%
Mar-12	376,365	149,759	526,124	71.54%	28.46%
Apr-12	357,315	152,731	510,046	70.06%	29.94%
Jun-12	338,544	251,740	590,285	57.35%	42.65%
Jul-12	314,682	441,496	756,178	41.61%	58.39%
Aug-12	306,277	500,639	806,916	37.96%	62.04%
Oct-12	270,113	468,841	738,954	36.55%	63.45%
Nov-12	316,138	541,406	857,544	36.87%	63.13%
Dec-12	246,543	497,887	744,430	33.12%	66.88%
Jan-13	315,912	537,271	853,183	37.03%	62.97%
Feb-13	204,251	497,887	702,138	29.09%	70.91%
Mar-13	204,303	497,887	702,190	29.10%	70.90%
Apr-13	189,299	497,713	687,012	27.55%	72.45%
			Average:	**66.18%**	**33.82%**

Table 1: Composition of Pipeline, Grid Supply and Net Metered
Source: New Jersey Office of Clean Energy

As shown in Table2 below, the completion rate for large grid-supply projects fell precipitously from the period January 2012 through August 2012, reflecting the greater difficulty in obtaining financing for large solar projects under current SREC prices.[15]

[15]The figure presented excludes projects within the May 2013 pipeline report.

As of Month Ending	Capacity in Solar Project Pipeline: Completed Projects Net Metered	Completed Projects Grid-Connected	Cancelled Projects Net Metered	Cancelled Projects Grid-Connected	Completion Percentages Net Metered	Grid-Connected	Total
	(kW)				(%)		
Aug-10	87,060	1,568	47,411	3,857	64.74%	28.91%	63.35%
Sep-10	145,637	11,388	58,074	6,222	71.49%	64.67%	70.95%
Nov-10	116,245	34,681	58,310	6,222	66.60%	84.79%	70.05%
Dec-10	104,658	35,629	57,767	6,222	64.43%	85.13%	68.68%
Jan-11	114,147	32,044	66,873	6,631	63.06%	82.85%	66.54%
Feb-11	149,394	27,799	89,524	6,631	62.53%	80.74%	64.82%
Mar-11	195,834	21,467	80,434	6,631	70.89%	76.40%	71.39%
Apr-11	210,599	21,467	88,201	6,631	70.48%	76.40%	70.99%
May-11	258,719	21,467	122,801	6,631	67.81%	76.40%	68.40%
Jun-11	256,791	20,553	151,909	6,631	62.83%	75.61%	63.63%
Jul-11	248,274	46,672	130,149	31,052	65.61%	60.05%	64.66%
Aug-11	236,385	77,556	155,280	59,314	60.35%	56.66%	59.40%
Oct-11	254,163	76,297	154,700	73,643	62.16%	50.89%	59.14%
Nov-11	250,087	71,156	152,880	73,643	62.06%	49.14%	58.65%
Dec-11	247,071	62,102	180,233	73,643	57.82%	45.75%	54.91%
Jan-12	230,107	19,260	168,708	73,643	57.70%	20.73%	50.71%
Feb-12	217,763	16,330	166,210	73,234	56.71%	18.23%	49.44%
Mar-12	203,218	13,119	141,886	73,234	58.89%	15.19%	50.14%
Apr-12	187,764	16,091	134,597	73,234	58.25%	18.01%	49.52%
Jun-12	164,508	13,443	122,631	59,143	57.29%	18.52%	49.47%
Jul-12	150,586	12,062	89,151	59,143	62.81%	16.94%	52.31%
Aug-12	139,333	12,062	87,797	41,725	61.34%	22.43%	53.89%
Oct-12	119,105	7,760	54,943	8,249	68.43%	48.47%	66.75%
Nov-12	164,866	46,054	50,752	8,249	76.46%	84.81%	78.14%
Dec-12	103,073	6,687	38,314	1,246	72.90%	84.29%	73.51%
Jan-13	159,439	46,070	47,457	1,246	77.06%	97.37%	80.84%
Feb-13	56,821	6,687	13,582	1,246	80.71%	84.29%	81.07%
Mar-13	43,863	6,687	5,390	1,246	89.06%	84.29%	88.39%
Apr-13	22,315	6,687	2,454	0	90.09%	100.00%	92.20%
				Average:	**66.09%**	**57.43%**	**64.28%**

Table 2: Project Completion Rates
Source: New Jersey Office of Clean Energy

Table2 also shows that net metered projects, which are generally smaller in capacity, have not seen the same decrease in completion rates as seen in larger grid-supply projects subsequent to the beginning of 2012. Instead, the completion rate for net metered projects has averaged over 66 percent (or approximately two thirds) since August 2010, and has increased to an average of over 81 percent since November

2012. This is important since capacity from net metered projects within the pipeline as of May 31, 2013 was nearly 182,055kW,[16] and on an absolute basis only 3.8 percent less than the amount within the pipeline at the end of April 2013. This would appear to suggest that a sizable amount of solar energy installation will continue for at least the near future, even in the wake of the current SREC market's comparatively low prices. This outcome is a positive development, not one that should be interpreted as being negative. High installation capacities in the solar project pipeline, coupled with low prices, entails that prices are (1) high enough to continue to support development but (2) low enough to not become burdensome to ratepayers. This is a policy outcome for which the Board should be proud and encouraged, not worried.

Stakeholders in several RE meetings have noted that grid supply solar projects comprise a very small portion of the New Jersey solar energy market.[17] In many instances, movements within the solar project pipeline can be influenced by other factors such as the timing of the Basic Generation Service ("BGS") auctions. Solar project announcements often expand in anticipation of the BGS as these developers seek to tie down their projects, or a portion of their projects, with prospective BGS participants.

Unsuccessful solar projects are often modified by the developer (such as developing at a lower capacity amount or potentially being cancelled). However, the original proposal remains in the pipeline, at its originally stated level, until it is removed by Board Staff after being inactive for a year. Such an example, however, is not function of market volatility as it is the result of natural ebbs and flows in the market.

[16] NJCEP Solar Project Pipeline As of 05/31/13, New Jersey Office of Clean Energy.
[17] See, for example, Comments in Response to Attempt to Define Solar Volatility (February 7, 2013), EffiSolar Development, p. 2.

Furthermore, while the pipeline for grid supply projects has grown recently, it is important to note that the pipeline for net metered projects has not declined noticeably. This is not due to projects lingering within the pipeline, but due to new net metered projects entering the pipeline at roughly identical rates projects being completed.

5. New Jersey's SREC Market is No More Volatile Than Other Energy Markets

It is also important to note that New Jersey's SREC market is no more volatile than other energy markets. Prices within all energy markets tend to be inherently volatile. For example, Figure 8 shows the recent historic trends for natural gas prices since 2008, while Figure 9 shows a comparable historic trend in monthly retail gasoline prices. Both energy price series reflect a good deal of variability, comparable to what is normally reflected in New Jersey solar markets.

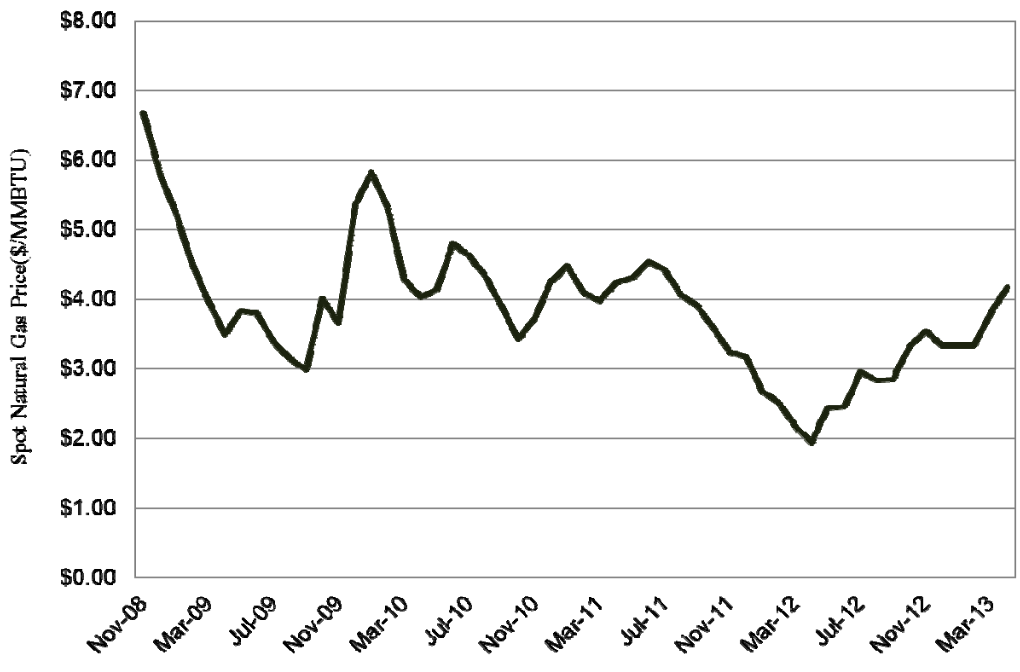

Figure 8: New Jersey Spot Natural Gas Prices
Source: Department of Energy, Energy Information Administration

Figure 9: New Jersey Gasoline Prices
Source: Department of Energy, Energy Information Administration

Figure 10 compares SREC price volatility with the price volatility of other energy commodities including natural gas, retail gasoline, hourly PJM energy prices and day ahead PJM energy prices. All prices are indexed to a common year (2008) for comparative purposes. The CVs are calculated for each commodity and show that SRECs reflect far lower pricing volatility than natural gas, retail gasoline, or wholesale electricity prices. When viewed in this light, solar energy prices are as stable as other energy markets, and do not reflect a degree of variability supporting any additional Board intervention.

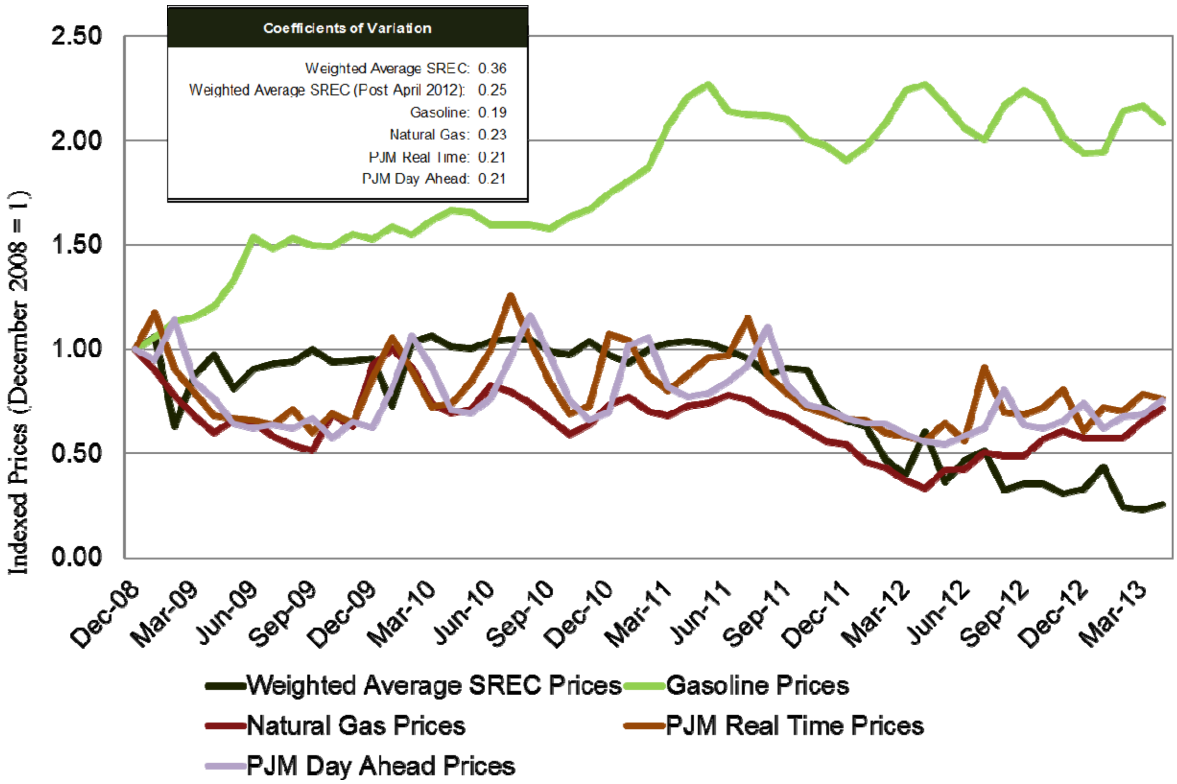

Figure 10: SREC Volatility Compared to Other Energy Prices (2008=100)
Source: Department of Energy, Energy Information Administration
New Jersey Office of Clean Energy and PJM Interconnection

6. Rate Counsel Response to Individual Stakeholder Comments

a. <u>Response to Renu Energy Comments</u>

Renu Energy commented that volatility connotes frequent, unexpected changes in underlying market conditions, and that volatility becomes more pronounced when the magnitude and frequency occurs in shorter time periods than the business cycle.[18] Renu Energy gave the following factors as impacting economic viability of investments:

- Financial Incentives –Investment Tax Credit, 1603 Law, SREC Pricing
- Financial Disincentives – SREC Pricing, Delays with Interconnection Permits, Distribution System Upgrade Requirements

[18] Solar Market Development Volatility (January 2013), RenuEnergy, p. 1.

- Facilitation – Affordable Financing, Long Term Power Purchase Agreements, Long Term SREC Purchase Agreements
- Governance – NJ Laws, BPU Regulations, Board Orders, Petition Resolutions[19]

Renu Energy attributes the rapid decline in SREC prices seen in recent years to the function of the SREC Market design. SREC market prices were allowed to rise to a level near the SACP, which triggered a high rate of capital investment, and caused the market to overshoot future SREC requirements.[20] Renu Energy concludes that overall, market volatility can increase risks to developers, lowering their rates of return on investment and increasing costs to ratepayers.[21]

However, Renu Energy does not foresee high volatility seen previously in the SREC market as being a major concern going forward.[22] First, the market is much more in balance than previously when virtually no SRECs were available to meet RPS requirements.[23] Second, the quality and availability of data has improved dramatically, allowing developers and investors to make more informed and rational business decisions.[24] Third, stakeholders in New Jersey have gained experience in developing solar energy projects and handling solar installations.[25]

Rate Counsel generally agrees with the majority of the statements made by Renu Energy. Volatility in the SREC and solar markets generally is the result of developers responding to uncertainty. This uncertainty arises from factors exogenous to the market such as regulation changes and changes in the price of solar technology. Uncertainty

[19] Solar Market Development Volatility (January 2013), RenuEnergy, p. 1.
[20] Solar Market Development Volatility (January 2013), RenuEnergy, p. 2.
[21] Solar Market Development Volatility (January 2013), RenuEnergy, p. 3.
[22] Solar Market Development Volatility (January 2013), RenuEnergy, p. 3.
[23] Solar Market Development Volatility (January 2013), RenuEnergy, p. 3.
[24] Solar Market Development Volatility (January 2013), RenuEnergy, p. 3.
[25] Solar Market Development Volatility (January 2013), RenuEnergy, p. 3.

was naturally high during the initial years of the Solar RPS as developers were "feeling out" the economic viability solar in the State. As developers and other stakeholders in the State have gained more experience with the requirements needed for solar development, this uncertainty has declined. Likewise, developers have also greater certainty in recent years as government regulators have been responsive to the information needs of developers and in the reasonable stability of the solar energy policy. At this juncture, the greatest threat to solar market volatility arises from the potential for rapid changes in solar energy policy in the future.

b. <u>Response to Quantum Solar Comments</u>

Quantum Solar believes it is important to understand the intent of the legislature in requesting "a proceeding **to investigate approaches to mitigate solar development volatility**."[26] Quantum Solar states that the legislature could not have been referring to volatility in the absolute growth of solar development as there has been little volatility in this arena. Instead, Quantum Solar believes the legislature was concerned with other market volatility issues.[27] For instance, Quantum Solar notes the large swing in sector ownership participation towards "huge third party non-ratepayer participation in solar financial incentives."[28]

Quantum Solar believes Staff should poll members of the REC committee, including itself, who participated in the negotiations which led to development of the language included within Solar Act.[29] Quantum Solar refers to additional language included within the legislature which states that the Board shall be responsible for

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[26] Quantum Solar, Comments, Solar Development Volatility in Solar Act (February 6, 2013), p. 1.
[27] Quantum Solar, Comments, Solar Development Volatility in Solar Act (February 6, 2013), p. 1.
[28] Quantum Solar, Comments, Solar Development Volatility in Solar Act (February 6, 2013), p. 1.
[29] Quantum Solar, Comments, Solar Development Volatility in Solar Act (February 6, 2013), p. 2.

ensuring implementation of the Solar Act is done in such as manner as to allow all market segments to participate.[30]

Rate Counsel disagrees strongly with Quantum Solar's recommendation in this matter. As stated previously, a plain meaning reading of "solar development volatility" finds that this term is different from "SREC price volatility." Quantum Solar recommends Staff and the Board interpret the intent of the Legislature beyond what a plain meaning reading of N.J.S.A. 48:3-87(d)(3)(b) finds. Furthermore, Quantum Solar's reference to N.J.S.A. 48:3-87(l)(9) and N.J.S.A. 48:3-87(m) are equally not applicable because these subsections only state that the Board's implementation of the Solar Act should allow all market segments to participate, importantly not participate equally. In fact, N.J.S.A. 48:3-87(m) makes this distinction explicit by stating "**appropriate coverage** across all ratepayer segments."

c. Response to EffiSolar Comments

EffiSolar believes the persistent volatility in the New Jersey SREC market has been the result of "unfettered and unregulated proliferation of net metered projects."[31] EffiSolar states that it is wrong that the bulk of attention of parties has been on the impact of grid supply projects causing market volatility, as these projects are largely irrelevant in the current environment.[32] EffiSolar believes that any efforts to manage volatility in the SREC market place should be directed towards adopting and implementing regulations on net metered projects.[33]

[30] Quantum Solar, Comments, Solar Development Volatility in Solar Act (February 6, 2013), p. 2.
[31] EffiSolar, Comments, Response to Attempt to Define Solar Volatility (February 7, 2013), p. 2.
[32] EffiSolar, Comments, Response to Attempt to Define Solar Volatility (February 7, 2013), p. 2.
[33] EffiSolar, Comments, Response to Attempt to Define Solar Volatility (February 7, 2013), p. 2.

Rate Counsel disagrees with EffiSolar's proposal to implement greater regulation and oversight of proposed net metered projects. The Board is not, nor should be, in the business of promulgating rules designed solely to artificially sustain high SREC prices and in the process exacerbate the current oversupply seen in the market.

d. Response to MSEIA Comments

In MSEIA's first comments, MSEIA noted that although the Solar Act did not define "solar development," the term must refer to the pace of construction of solar projects.[34] This is in contrast to most stakeholder discussion which has focused on SREC price volatility.[35] MSEIA proposed seeking clarification from the Legislature regarding the intent behind its legislation.[36]

In MSEIA's second comments presented April 9, 2013, MSEIA presented the results of its supply/demand model. This model used a created construct to demonstrate the inherent volatility within the New Jersey solar market created by the SREC system. If solar development is held at a rate that keeps RPS demand and supply for SRECs in balance 2016 and onward, the model shows that incremental solar development oscillates between no solar development and 200MW of capacity.[37] Likewise, if incremental solar development is held to a smoothly declining curve, the SREC market swings between being undersupplied and oversupplied.[38]

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[34] Re: S1925 subsection d.(3)b; Approaches to mitigating solar development volatility (February 7, 2013), Mid-Atlantic Solar Energy Industries Association, p. 1.

[35] Re: S1925 subsection d.(3)b; Approaches to mitigating solar development volatility (February 7, 2013), Mid-Atlantic Solar Energy Industries Association, p. 1.

[36] Re: S1925 subsection d.(3)b; Approaches to mitigating solar development volatility (February 7, 2013), Mid-Atlantic Solar Energy Industries Association, p. 1.

[37] MSEIA Supply/Demand Model: Implications for Solar Development Volatility (April 9, 2013), Mid-Atlantic Solar Energy Industries Association, p. 4.

[38] MSEIA Supply/Demand Model: Implications for Solar Development Volatility (April 9, 2013), Mid-Atlantic Solar Energy Industries Association, p. 6.

Rate Counsel disagrees with the findings of MSEIA, and asks Staff and the Board to give little credence to the results. As openly admitted by MSEIA itself, the model shows nothing more than the results generated by a set of assumptions not likely to arise in New Jersey solar energy markets.[39] For instance, the first hypothetical assumes that no solar developer would consider a solar project if not supported by the current existing market, even if it is projected that future energy years would support the project. This ignores the lag in developing solar energy projects, and furthermore ignores that SRECs may be "banked" for use in any of the two energy years following the energy year in which the SREC was generated.[40] Banking within compliance markets such as the New Jersey SREC market is included for the sole purpose of providing flexibility to developers regarding the timing of solar development if market conditions warrant delay.[41]

MSEIA's second hypothetical situation is also not likely to arise in New Jersey solar energy markets. For instance, MSEIA's assumption to hold solar development to a smooth declining curve year to year violates basic economic precepts that changes in quantity supply are reflective of changes in quantity demanded. If there is a reasonable expectation that the New Jersey SREC market will be undersupplied in EY2017, as shown in MSEIA's hypothetical construct, it is illogical to assume that incremental solar supply added will continue to fall year over year. MSEIA's hypotheticals show nothing

[39] MSEIA Supply/Demand Model: Implications for Solar Development Volatility (April 9, 2013), Mid-Atlantic Solar Energy Industries Association, pp. 2-3.

[40] See, PJM Environmental Information Services: http://www.pjm-eis.com/program-information/new-jersey.aspx

[41] See, Managing Allowance Prices in a Cap-and-Trade Program (November 2010), Congressional Budget Office, p. VII; "Under most proposed programs, firms could shift their use of allowances from one year to another by 'banking' unused allowances for the future or, to a more limited degree, by 'borrowing' allowances from future allocations. **The trading and flexibility in timing would allow firms to undertake emissions reductions where, how, and to some extent when it was least costly for them to do so.**" (Emphasis supplied.)

more than that it is impossible for the market to operate with zero volatility in either SREC prices or incremental solar development.

e. <u>Response to SEIA Comments</u>

SEIA believes SREC forward price curves provide a more robust indicator of price uncertainty than SREC spot prices. To this end, it is problematic that the forward market for New Jersey SRECs is neither liquid nor transparent.[42] SEIA believes another good indicator of solar market development volatility is the volatility in the relationship between supply and demand. SEIA maintains that in a stable market supply and demand will remain in relatively close balance while large and persistent periods of over and under-supply are indicative of volatile markets.[43] Regarding this second indicator, SEIA recommends comparing current build rates to the average of the prior six months based on a recommendation from SRECTrade.[44] SEIA also recommends that Staff review the trend of SREC applications in analyzing solar market development volatility.[45]

SEIA contends that volatility harms the stated goals of the RPS by treating job stability by driving up financing costs. Secondly, the short-term nature of price signals from spot markets leads to boom-bust cycles and destructive markets inefficiently

[42] RE: Comments on definition, indicators, and impact of 'solar market development volatility' (February 13, 2013), Solar Energy Industries Association, p. 3.
[43] RE: Comments on definition, indicators, and impact of 'solar market development volatility' (February 13, 2013), Solar Energy Industries Association, p. 4.
[44] RE: Comments on definition, indicators, and impact of 'solar market development volatility' (February 13, 2013), Solar Energy Industries Association, p. 4.
[45] RE: Comments on definition, indicators, and impact of 'solar market development volatility' (February 13, 2013), Solar Energy Industries Association, p. 4.

allocating capital. SEIA furthermore contends that Ratepayers are likewise harmed by overly volatile markets because they result in higher financing costs to developers.[46]

Forward markets are defined as informal over-the-counter (i.e. person-to-person) financial markets. All forward markets are not transparent as they are directly negotiated by the parties involved, or through a third party broker. This is the case when viewing contracts for New Jersey SRECs or any other contract. For instance, an airline wishing to purchase jet fuel from a supplier for years into the future for the purposes of hedging against potential price escalation in oil commodities is no more required to release the details of this arrangement than sellers of SRECs years into the future. SEIA is presumably concerned about the lack of an organized market for standardized SREC forward contracts, or futures, such as derivatives traded on the New York Mercantile Exchange ("NYMEX"). To Rate Counsel's knowledge, there is nothing in New Jersey law preventing the establishment of an organized futures market for SRECs, and the CME Group, which owns the NYMEX, already has such markets for Regional Greenhouse Gas Initiative ("RGGI") allowances. That an organized market for New Jersey SREC futures has not be established is simply a reflection of the estimated volumes traded in such a market making such a venture uneconomic.

Likewise, SEIA's confuses the concepts of volatility with instability. As explained earlier, a market with high degrees of price volatility is not necessarily unstable. Indeed, the slowing solar build rate cited by SEIA represents solar development volatility, represents precisely this market stability. The current solar generation market possess more generation than required to meet the current solar RPS. It is a

[46] RE: Comments on definition, indicators, and impact of 'solar market development volatility' (February 13, 2013), Solar Energy Industries Association, p. 5.

representation of a stable market that build rates fall, otherwise this market condition would never attain balance. A market which is long, possessing greater supply than demand, does not equate to being volatile or unstable, but simply reflects falling prices in the short-term, and a reduced growth in supply going forward.

SEIA's assertion that a long duration for over/under supply conditions is indicative of volatile markets is similarly inconsistent with economic and financial theory. The responsiveness of market is reflective of the rigidity and liquidity of the underlying products, which all markets possess in varying degrees. For instance, the market for international currencies can be said to be highly responsive to market changes as currency transactions are made electronically between foreign banks within seconds. The market for solar development is affected by the amount of time it takes to develop solar projects as well as the important recognition that existing generation is fixed as owners as the marginal cost of operation is very low once constructed. Again, this rigidity arises in some markets,[47] and is not a reflection of "instability," but simply intrinsic market dynamics.

f. Response to Alpha Inceptions, LLC Comments

Alpha Inceptions believes the Solar Act was itself an attempt to correct the instability of solar development in New Jersey.[48] Historically, the high costs of solar development relative to other renewable energy pushed prices close to or at the SACP. According to Alpha Inceptions, in 2012 a combination of rapidly falling solar equipment prices and very generous federal and state incentive programs resulted in the

[47] The rigidity of the labor market in particular has been well studied by economists, and is one of the principle elements of the Keynesian and New Keynesian schools of macro-economic thought.

[48] RE: Comments on Solar Development Volatility and Market Structure (February 14, 2013), Alpha Inception, p. 2.

breakeven cost for solar development falling to levels around $350 or less while the SACP and market prices remained at $650, a differential which allowed developers to receive returns potentially in excess of 40 percent over 10 years. This potential for large returns and the fact that development pipelines and construction of solar projects typically take years led to a substantial overbuild even as the market was already oversupplied.[49]

It is Alpha Inceptions' position that the Solar Act was designed to soak up some of the oversupply, and furthermore make sure that the cycle of oversupply/undersupply did not repeat itself. In this, Alpha Inceptions asserts that the legislation intended for the Board to "engineer a situation" whereby the solar development within the State is contained within certain boundaries. To this end, Alpha Inceptions suggests a 3-month moving average of solar build completions more than 5 MW outside of a 20-25MW per month range suggestions volatility levels which are counterproductive.[50]

Alpha Inceptions also states that it is important to understand the underlying elements which drive development commitments. Alpha Inception believes that although there will always be "un-savvy investors or speculators" willing to build new projects without contracts or price signals, "these ventures will never drive the general market long term."[51] Alpha Inception suggests the majority of developers require prices that allow for 8-15 percent return on capital investment on a levelized basis.[52] Alpha Inception finally concludes that the easiest way to mitigate the volatility seen in the

[49] RE: Comments on Solar Development Volatility and Market Structure (February 14, 2013), Alpha Inception, p. 2.

[50] RE: Comments on Solar Development Volatility and Market Structure (February 14, 2013), Alpha Inception, p. 2.

[51] RE: Comments on Solar Development Volatility and Market Structure (February 14, 2013), Alpha Inception, p. 2.

[52] RE: Comments on Solar Development Volatility and Market Structure (February 14, 2013), Alpha Inception, p. 2.

market is through market mechanisms which control artificially high and low SREC prices.[53]

Rate Counsel agrees with Alpha Inceptions' depiction of the historic underpinnings of the over-supply seen in the SREC market. Rate Counsel also agrees that the Legislature's intent in changing the Solar RPS requirements within the Solar Act was partly to soak up a portion of the excess solar generation seen at the time of the Solar Act. Rate Counsel however disagrees that the Legislature intended for the Board to "engineer a situation" to control the market dynamics of the SREC market. Indeed, such engineering seems counterproductive to the idea of a competitive market, and would fall far outside of the Board's jurisdiction.

Rate Counsel understands Alpha Inceptions' recommendation as requesting something similar to a price cap and price floor bounding SREC prices. The State's current market however already has a price cap in the form of the SACP which controls exceedingly high SREC prices. Regarding adopting a price floor, this policy seems unnecessary and counterproductive. As stated by Alpha Inceptions, speculators building new projects at uneconomic SREC prices will never drive the New Jersey solar market long-term, so SREC prices trading at too low a level to support reasonable return on investments is a temporary occurrence which will inevitably stabilize as solar development slows. Likewise, if the costs of solar development fall such that this administratively determined price floor is above the SREC price needed to support solar develop, such a policy will only serve to perpetuate a solar generation oversupply ad infinitum.

[53] RE: Comments on Solar Development Volatility and Market Structure (February 14, 2013), Alpha Inception, p. 3.

g. Response to the New Jersey Solar Grid Supply Association

The New Jersey Solar Grid Supply Association ("NJSGSA") believes the SRP pipeline statistics as published by Staff do not present a realistic picture of New Jersey solar development going forward. About 77 percent (approximately 381MW) of grid supply projects in the solar project pipeline were registrations submitted between May and August 2012, and were more than likely hastily submitted because at the time it was viewed that presence within the pipeline alone would grandfather projects on land designated as farmland restricted by the Solar Act. NJSGSA suggests Staff leverage data already in its possession to provide parties more accurate information regarding solar installation trends going forward.[54]

NJSGSA however states that the overwhelming majority of solar installations have come from net metered projects. This is due to grid supply projects being expensive to develop, complicated, and time consuming, resulting in a low success rate.[55] The current PJM interconnection queue reflects a slowing of grid projects, with only 9 applications having been received by PJM in the period April 2012 to April 2013.[56] NJSGSA furthermore believes some pipeline data concerning grid projects filing under Subsection S of the Solar Act is inflated as these projects have rushed their applications to the Board in order to receive approval.[57]

NJSGSA recommends Staff modify pipeline forecasts to provide increased transparency to industry stakeholders. Second, NJSGSA believes Legislative intent

[54] Mitigating Solar Development Volatility: Analysis of the NJ Solar Project Pipeline (April 8, 2013), New Jersey Solar Grid Supply Association, p. 3.

[55] Mitigating Solar Development Volatility: Analysis of the NJ Solar Project Pipeline (April 8, 2013), New Jersey Solar Grid Supply Association, p. 4.

[56] Mitigating Solar Development Volatility: Analysis of the NJ Solar Project Pipeline (April 8, 2013), New Jersey Solar Grid Supply Association, p. 5.

[57] Mitigating Solar Development Volatility: Analysis of the NJ Solar Project Pipeline (April 8, 2013), New Jersey Solar Grid Supply Association, p. 8.

regarding solar development on farmland is clear, and that due to this there is a finite amount of new solar generation from farmland grid supply projects. Furthermore, NJSGSA states that given the low probability of success of grid supply projects, the approval by the Board to qualify for SREC generation does not equate to knowledge that the project will be built.[58]

Rate Counsel agrees with the depiction of the current SREC market presented by NJSGSA. The limited role of grid supply projects on the market and the slowing of new grid supply development going forward are consistent with Rate Counsel's views of the market presented earlier. Rate Counsel also suggests the Board's recent ruling denying a substantial portion of projects filed under subsection (s) of the Solar Act[59] corroborates these views.

Rate Counsel furthermore agrees with NJSGSA's overarching position that much of the concern expressed by stakeholders regarding volatility in the current solar market is overblown. The market, especially the market for grid supply projects, is gradually reacting to the State's current oversupply of solar generation, and will continue to do so for the coming years.

7. Conclusions and Recommendations

Many external factors can influence uncertainty and therefore volatility. Policy changes made by government entities has been cited to be one such factor influencing volatility in stock market prices[60] as well as behaviors of banks.[61] It has also been

[58] Mitigating Solar Development Volatility: Analysis of the NJ Solar Project Pipeline (April 8, 2013), New Jersey Solar Grid Supply Association, p. 10.

[59] N.J.S.A. 48:3-87(s).

[60] Pastor, Lubos and Pietro Veronesi, Uncertainty About Government Policy and Stock Prices, National Bureau of Economic Research, June 2010.

[61] Nosal, Jaromir and Guillermo Ordonez, Uncertainty as Commitment, National Bureau of Economic Research, February 2013.

established within economic literature for decades that policy changes have the potential to create gains and losses for those who correctly or incorrectly anticipate these future policy changes.[62] Furthermore, due to market participants anticipating the effect of policy changes through rational expectations, these changes can even impact a market today.[63] Therefore, it is crucial to understand that policy changes, in and of themselves, can cause uncertainty about future policy changes and thus lead to increases in volatility. This can be true even if the policy change is designed to decrease volatility. Therefore, any proposed policy change should be weighed by both its potential to decrease volatility due and the subsequent uncertainty that arises for changes in policy.

The solar market in New Jersey is a relatively young market compared other traditional energy commodities such as crude oil, natural gas, and even wholesale electricity. Therefore, market stability is certainly of particular importance. However, the Board and Staff should be cautious against rushing too quickly to adopt changes in policy in the mistaken desire to promote market stability. As noted before, changes in these policies alone can create more, not less instability. The Board's solar energy goals over the past several years have always focused on eliminating regulatory uncertainty. Resorting to dramatic policy changes each and every time the market moves runs counter to prior Board precedent, and ultimately leads to a lack of policy credibility over the long run since market participants will know, and come to expect, policy changes each and every time some deviation from normal arises. Rate Counsel recommends the Board hold to its current course of maintaining its existing, relatively

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[62] Kaplow, Louis, Government Relief for Risk Associated with Government Action, National Bureau of Economic Research, June 1989.

[63] Frank, Robert and Ben Bernanke, Principles of Macroeconomics 5th Edition (2013), pp. 82-83.

balanced, solar market design and allowing the nature competitive forces of supply and demand run their course.

COMMENTS OF THE SOLAR ENERGY INDUSTRIES ASSOCIATION (SEIA) ON APPROACHES TO MITIAGE SOLAR DEVELOPMENT VOLATILITY PURSUANT TO N.J.S.A. 48:3-87(d)(3)(b)

Date: July 1, 2013
Re: Investigation of approaches to mitigate solar development volatility

Dear Mr. Hunter,

The Solar Energy Industries Association (SEIA) submits these comments in response to the Board Staff's request for comments in the public proceeding on approaches to mitigate solar development volatility pursuant to N.J.S.A. 48:3-87(d)(3)(b) (I/M/O The Implementation of L.2012, c. 23, The Solar Act of 2012 Docket No. EO12090860V.) SEIA appreciates the continued stakeholder dialogue on this critical matter.

New Jersey has been a leader in building a vibrant and competitive solar industry over the last decade. The State has seen the fruits of that investment though jobs created, emissions avoided, stability and savings in home-owners' and businesses' electricity bills, and private capital invested in New Jersey to build much needed in-state generation capacity.

In the Solar Act of 2011, the NJ Legislature recognized the volatility of the current solar market and the negative impacts associated with such solar development volatility. In response, the legislature directed the BPU to investigate and report back on ways to mitigate solar development volatility.

SEIA is the national trade association for the U.S. solar industry and is a broad-based voice of the solar industry in New Jersey. SEIA member companies have installed over 60% of all MWs operating in New Jersey and work in all market segments – residential, commercial, and utility-scale. In addition, SEIA member companies provide solar panels and equipment, financing and other services to a large portion of New Jersey solar projects.

These comments lay out SEIA's definition of 'solar development volatility', examine several policy frameworks to address volatility, and discuss the importance of increased transparency as a necessary but not sufficient response to volatility.

I. Definition of 'Solar Development Volatility'

There are many intertwined inputs into 'solar development volatility' – volatility in the price of SRECs, which impacts the pace of development and the risk premium associated with this; volatility in the relationship between the supply and demand of SRECs, which impacts the price of SRECs; and volatility in the pace of development, which impacts the supply-demand balance. A competitive market will naturally have some ebb and flow in the pace of development and some ups and downs in pricing. A regulator should guard against persistent and significant swings that result from market design imperfections or barriers.

From the point of view of a developer, volatility in future income streams drives uncertainty and financial risk, which drives solar development volatility. When the market is predominantly reliant on spot markets and short-term (i.e. up to 3-yr) SREC contracts rather than financing terms that are more aligned with the 15 year period over which a project produces SRECs, SREC spot market volatility is inexorably intertwined with solar development volatility.

A stated goal of the RPS is to develop a robust and sustainable market for solar energy in New Jersey, including the associated job growth. (Solar Transition Order, p. 17) Too much volatility harms this goal in two ways. First, job stability depends on an orderly investment environment. Too much uncertainty in future revenue streams tends to promote boom-bust development cycles, with the associated job instability.

Secondly, an overly volatile market damages the business ecosystem needed for vibrant and competitive markets. The number and composition of businesses active in a competitive market will naturally evolve over time. However, a 'bloody' market where high risk leads to big winners and big losers is overly destructive and an inefficient use of capital. An orderly investment environment facilitates the building of strong business ecosystem today in order to serve the market demands of tomorrow.

Ratepayers are likewise harmed by reliance on overly volatile markets to comply with RPS requirements. The economic damage is not just from paying high prices when the development pipeline dries up, but also from paying higher prices on average to cover the additional financing and hedge costs incurred by developers as a result of spot-market volatility.

Note that this does not mean driving up spot-market prices and keeping them high, but rather ensuring the availability of less-volatile sources of revenues such as long-term contracts in order to stabilize market development activity and promote efficient pricing in both spot and longer-term markets. SEIA is not arguing for a risk-free, fully guaranteed market. Rather, SEIA argues for reducing risk in a competitive manner, allowing markets to find efficient and stable prices so that buyers, sellers, and ratepayers can benefit.

II. Policy Responses to Mitigating Solar Development Volatility

The Solar Transition Order of September 12, 2007, set up the initial framework for a solar market driven by incentives from the SREC market. Following this, the Legislature codified the SREC market. In its 2007 Order, the Board highlighted the importance of sustained orderly development as a primary criterion for choosing the market design. Per this Order, sustained orderly development includes both 1) the ability for the market to reduce incentives over time as the cost of solar installations decline and 2) an environment that supports investor confidence. It was noted that uncertainty in the cash flow associated with solar projects lowers investor confidence, raising the cost of financing and the need for higher returns. Reducing such risk would reduce the level of incentives required. (Solar Transition Order, pp. 17 & 18)

During the timeframe of the above-mentioned Board Order, when the market was transitioning from a rebate model to an SREC model, it was clear to stakeholders that long-term price stability would be critical to sustained, orderly development. Almost six years later, the Legislature has recognized the volatility in the current market and asked the BPU to investigate ways to mitigate it. The below options for mitigating development volatility can be broadly categorized into two groups: (1) approaches for directly stabilizing SREC revenues to individual suppliers; or (2) measures designed to provide broader support to the SREC market by firming up spot-market SREC prices. Each of these options has its pros and cons.

The following options are discussed below:

1. Targeted support to stabilize SREC revenues:
    a. Transferring the SRPS obligation from suppliers to the EDCs.
    b. Continuing and expanding the EDC SREC programs.
    c. Implementing an SREC tranche.
2. Broader support to the SREC market
    a. Automatically adjusting solar requirements in response to market conditions.
    b. Creating a floor under spot-market prices.
    c. Capping market entry.

<u>1. Targeted support to stabilize SREC revenues</u>: The focus of approaches in this category is on providing long-term stability by transferring price risk from developers to parties that can bear such risks more efficiently. If the scope of these efforts is sufficiently broad, they may also dampen sharp swings in project development – and in the demand-supply balance – and provide an ancillary benefit by mitigating price volatility in the spot market. Implemented correctly, measures in this category can also meet the Board's goal of reducing the incentive levels over time, mirroring decreases in the underlying installation costs.

1a. Transferring the SRPS obligation from suppliers to EDCs.

- Although EDCs can more naturally take a longer market position on SRECs than suppliers, this option would not automatically result in reduced volatility; the BPU would need to establish parameters for an appropriate portfolio of long-, medium-, and short-term contracts. Depending on the portfolio of contract terms taken, this approach could mitigate both project development volatility and reduce the risk premium associated with development.
- Since this changes the underlying structure of the market (by changing the ultimate 'buyer'), transition and legacy issues would need to be addressed.
- Vis-à-vis the current EDC SREC finance programs (Solar Loan III and SREC II), this framework would likely reduce the transaction costs associated with long-term SREC contracting relative to those associated with the current EDC programs.[1] For example, under the current programs, the EDCs incur transaction costs when the SRECs procured under long-term contracts are re-sold into the annual market at auction. These transaction costs would be avoided if the EDCs could instead utilize the long-term SRECs to directly satisfy their RPS obligations.
- The EDCs may oppose imposition of the RPS obligation, since it would increase regulatory risk associated with the recovery of RPS compliance costs. However, the Board could address such concerns by providing assurances of full recovery of prudently incurred expenditures.

2a. Expansion of the EDC SREC programs.

- Per the Board's May 2012 Order, the four utilities have filed for an extension of their current SREC financing programs for a cumulative 180MW over three years. This is approximately one-quarter of the market over these years. The scale of this effort may be too small to have a measurable impact on project development volatility, market stability and market-price volatility.
- A properly structured program of direct EDC contracting or financing is probably the most effective and cost-efficient option for stabilizing long-term SREC revenues and ratepayer RPS-compliance costs.[2] This option provides for an economically efficient transfer of SREC price risk from individual developers to EDC ratepayers.
- An expanded EDC SREC program would have relatively fewer transition issues, as the BPU, the EDCs, and the solar industry in New Jersey has significant experience with these programs.

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[1] This would also remove the SREC-price risk from BGS suppliers, and thus would likely reduce the risk premiums on BGS auction prices.

[2] The benefits of this approach may be more pronounced if the EDCs assumed the solar obligation or if they retired the SRECs on behalf of entities with an RPS obligation.

3a. Implement an SREC Tranche in the BGS Auction.

- Under the SREC tranche approach proposed by SEIA in BPU Docket No. ER12020150, a portion of the BGS solar obligation would be satisfied through the purchase of ten-year SREC strips from non-utility Renewable Serving Entities (RSE). Unless the solar obligation was transferred to the EDCs, BGS suppliers would be required to purchase the SRECs procured through the SREC tranche.
- The SREC tranche approach allocates market risk in much the same way as do the BGS auctions. In the BGS auctions, winning bidders assume all risks associated with serving BGS load for three years at the auction-clearing price. Likewise in the case of the SREC Tranche, winning RSEs would assume all risks associated with providing their SREC commitments over a ten-year period.
- The SREC Tranche option could be complimentary with the EDC program approach. To the extent certain market segments are better served by a Renewable Energy Tranche mechanism, either because of cost, scale advantage, or natural business cycles, SEIA would encourage the Board to consider whether and how to modify the structured EDC SREC Finance Program to focus on potentially underserved markets (e.g., small systems under 50 kw; small developers) or to address certain "policy" markets favored as a matter of public policy objectives (e.g., landfills or brownfields) that may not be fully exploited in a strictly competitive market environment.
- Since RSEs would assume all risks associated with long-term SREC commitments under the SREC tranche approach, a substantial portion of the solar obligation could be satisfied with long-term SRECs without burdening the EDCs balance sheets or exposing ratepayers to migration-related SREC price risk.
- Although winning RSEs will assume a ten-year obligation, there is no guarantee that they will fulfill that commitment with long-term contracts with developers. Instead, RSEs would likely satisfy their obligations with the mix of spot, medium, and long-term purchases that maximizes profits within risk tolerances.
- Given the long-term obligation associated with the SREC tranche, RSEs may price in excessive risk premiums in their bids. There may be opportunities to mitigate (but, not eliminate) RSEs' risk exposure through the design of the SREC tranche. For example, the SREC tranche could be structured to solicit a fixed number of SRECs, rather than a percentage of the BGS solar obligation, thereby eliminating RSEs' exposure to short-term load risk and long-term migration risk.[3]
- Transition issues would need to be considered, as both the mechanics of the concept would need to be developed as well as the solar industry would need to become familiar and comfortable with the framework.

[3] However, this approach would transfer such load-related risk to the EDCs' ratepayers.

<u>2. Broader support to the SREC market</u>: Options in this category are designed to directly support and stabilize spot-market prices, either by increasing SREC demand, limiting SREC supply, or by imposing price supports. Although these options offer broad market support and reduce revenue risk to some degree, such market interventions are unlikely to offer long-term revenue stability to developers.

2a. Market-responsive solar requirements.

- This option would allow adjustments to annual solar requirements based on the relationship between SREC supply and demand.
- Market-responsive solar requirements provide an automated mechanism for dampening price volatility, or at least firming up prices, by adjusting demand in proportion to supply.4
- This option would require significant market redesign, with the corresponding transition issues and impact on the regulatory uncertainty faced by the market.
- Depending on its structure and complexity, such a market structure may not provide adequate SREC price stability to reduce project finance risk and therefore may not be a viable alternative to long-term contracting.

2b. Establish an SREC price floor.

- Another option for dampening SREC spot-price volatility would be to implement a mechanism that creates a floor on the market-clearing price.
- A floor price would reduce risk premiums, as financial models could use the floor price instead of zero when discounting uncontracted SRECs.
- Just as the SACP serves to cap prices in times of scarcity, a price floor is a reasonable approach for controlling sharp price declines in times of excess supply. In either case, such price limits dampen price swings in the spot market and serve to moderate the typical boom/bust response to price volatility in uncontrolled spot markets.
- A price floor is likely to be viewed by buy-side market participants as an anti-competitive and uneconomic price support.
- A floor price that is set too high may not protect against oversupply, as a projects would have an incentive to generate SRECs even if oversupply leads the market price towards zero.
- As the BPU's previous exploration of this issue reveals, the implementation of a price floor raises some challenging implementation questions. For example, a mechanism would have to be established to ensure the price floor, either by requiring suppliers and providers to pay a mandatory minimum price, or by creating a financial backstop mechanism.

[4] Although the adjustment would be lagged, the potential for adjustment in future years would likely provide some support for current-year prices if SRECs were bankable.

2c. Establish an entry cap or a 'gatekeeper'.

- In theory, this option would moderate spot-market prices by controlling the supply of SRECs. For example, the SREC Registration Program could be modified to cap registration of new projects in any year at or around the increment in the solar requirement for that year.
- This option would by definition moderate the pace of projects developed in any given year, but could create significant uncertainty in business development by limiting access to the SREC market
- An entry cap could provide opportunities for the widespread exercise of market power by removing most of the uncertainty in the supply of SRECs and lowering the likelihood of excess supply conditions. Under such market conditions, and faced with a fixed and known demand, suppliers may be less likely to price SRECs competitively and instead would have strong incentives to price at or just below the SACP.
- Even if the cap could be designed to discourage market power, limits on market entry are unlikely to effectively stabilize SREC spot prices. If entry is rationed on some basis other than cost, market prices are likely to continue to fluctuate (and clear at economically inefficient levels) based on the costs of the supply projects that gain entry in any year. Conversely, if entry is rationed on the basis of cost, then market prices are likely to resemble, in both magnitude and volatility, market-clearing prices that would prevail without controls on entry.

III. Increased Market Transparency – Necessary but Not Sufficient

During the course of dialogue around this issue, several stakeholders have suggested ways to increase market transparency and thereby reduce volatility. SEIA agrees that increased market transparency is critical to a well-functioning market and supports efforts to this end. However, SEIA cautions that increased market transparency is necessary but not sufficient for mitigating development volatility.

Respectfully submitted,

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