
Mitigating Solar Development Volatility: Analysis of the NJ Solar Project Pipeline

NJ Solar Grid Supply Association

April 8, 2013

Purpose

A report containing solar installed capacity and pipeline estimates is circulated at the monthly Renewable Energy Meetings in Trenton

- Report title: *“Initiation of a Proceeding to Investigate Approaches to Mitigate Solar Development Volatility pursuant to N.J.S.A. 48:3-87(d)(3)(a)”*

The purpose of this document is to:

- 1) provide supplemental supportive data and analysis of the NJ solar development pipeline, with specific reference to the impact of proposed direct grid supply projects
- 2) highlight naturally occurring trends supporting the position that the goals of the 2011 Energy Master Plan (concerning grid project development) are well underway
- 3) highlight known status data for farmland grid projects

Accurate relevant forecasts provide transparency so that stakeholders may make informed decisions → thereby reducing the volatility costs borne by all participants, and helping to stabilize the market for the long term.

The data contained herein is reasonably accurate, but may be subject to immaterial inaccuracy due to the limited publicly available data. It is not the purpose of this document to demonstrate precision, but rather to provide trend analysis and observations.

The Published Pipeline Does Not Present a Realistic Picture

Installed Solar Projects as of 1/31/13				
Interconnection Type	Qty	System Size (kW)	Percent	Avg System Size (kW)
Behind the meter	19,824	778,094.5	79.9%	39.3
Direct Grid Supply	95	195,346.6	20.1%	2,056.3
Totals	19,919	973,441.1	100.0%	48.9
Solar Project Pipeline as of 1/31/13				
Interconnection Type	Qty	System Size (kW)	Percent	Avg System Size (kW)
Behind the meter	4,750	233,567.5	31.9%	49.2
Direct Grid Supply	49	497,887.1	68.1%	10,161.0
Totals	4,799	731,454.6	100.0%	152.4
Totals For All Projects	24,718	1,704,895.7		69.0

40 of the 95 installed grid projects are PSE&G poles (~35MW)

- Installed Grid “Qty” *should be* 56, not 95

Grid supply pipeline statistics originate from SRP Registrations

- 49 direct grid supply projects at ~498MW
- At least 3 (~22MW) are brownfield/landfill sites
- 29 projects (~325MW) gave notice to validly qualify for Subsection S, which presumes they are farmland projects.
- The remaining 17 (~151MW) are either expired, pending landfill/brownfield sites or projects that may seek approval into the 80MW yearly cap set by Subsection Q of the Solar Act.

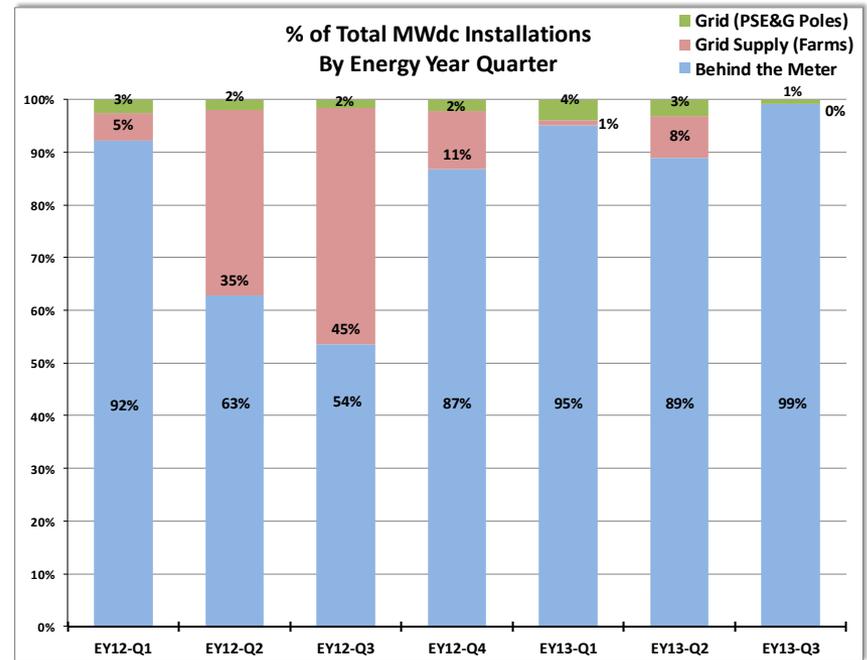
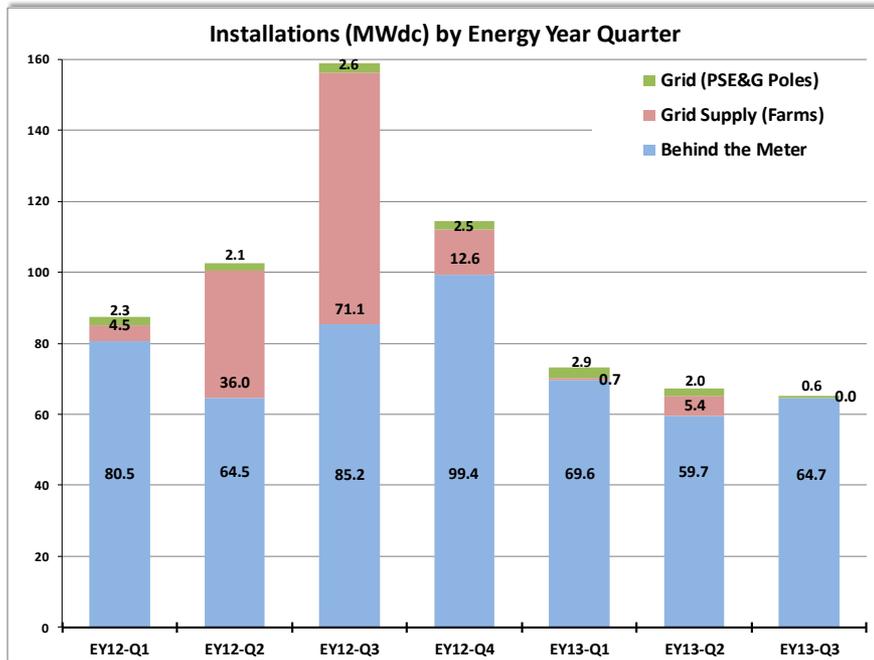
SRP Registrations are NOT a reliable source of data to analyze the Grid Supply pipeline

- Projects representing ~381MW (~77%) of the grid “pipeline” submitted registrations between May and August 2012
 - A large proportion of registrants indicate these SRP registrations were hastily submitted because the 2012 Solar Act legislation was vague, and rumors suggested an SRP number alone would qualify projects for SRECs.
 - These projects do NOT represent a realistic snapshot of the true grid pipeline.
- There is a “zero” scrub rate; Many projects listed do not have land approvals, and may never receive them.

In order to provide greater transparency, the pipeline report should leverage data already in the BPU’s possession, including the extensive applications required by the Solar Act Subsection S Application Form

- Legislative criteria in three separate and distinct subsections of the 2012 Solar Act effectively phase out Farmland Grid Projects over a three year period. A more realistic pipeline number would allocate the extensive data on known projects according to statutory limitations... and then add them together
 - How many projects will be approved via Subsection S? How many will be **truly** ready to energize in the next 12 months?
 - How many projects are brownfield/landfill projects?
 - For those not counted in the above, Subsection Q sets an 80MW per year limit.

History of Installations – A Low Success Rate for Grid



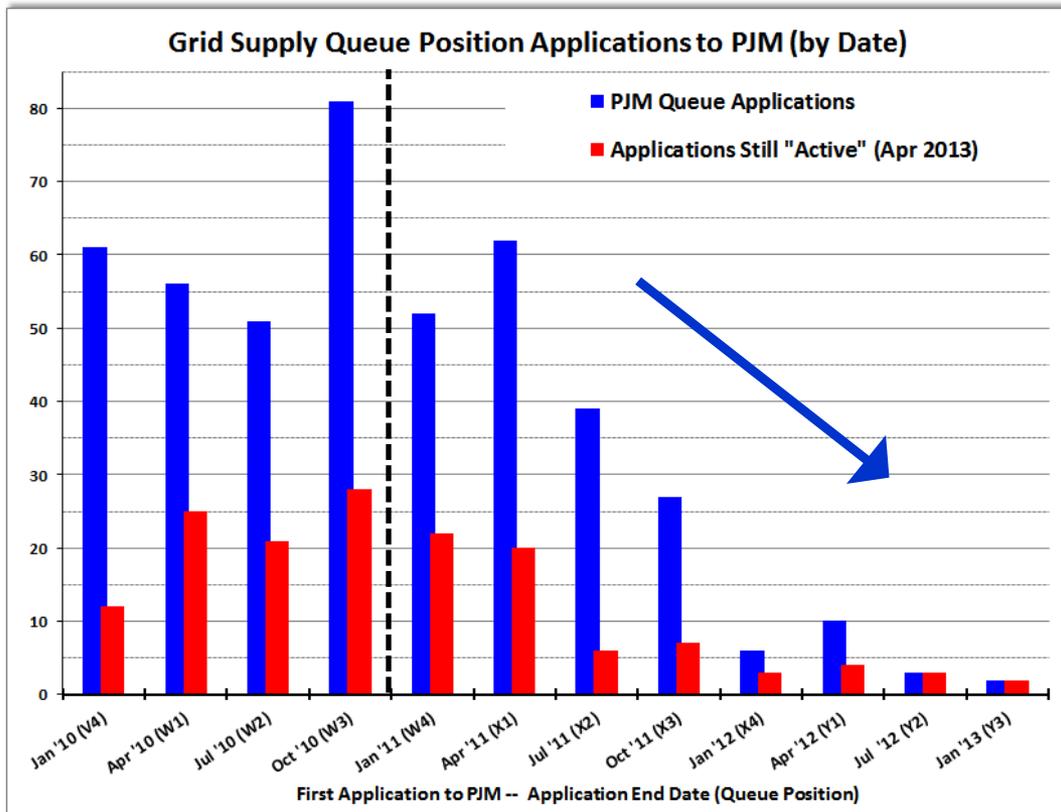
Aside from Q2/Q3 of EY2012, NJ solar installations have overwhelmingly come from 'Behind the Meter' projects

One main reason... grid project development is expensive, complicated and time consuming → with a low success rate

- PJM process alone takes 18 months (assuming no delays) from queue entry until ISA is tendered; construction of the interconnection can take up to 36 months
- Expensive and lengthy process for: site control and local, county, state & environmental permits
- Land use approval process is lengthy and difficult with a high denial rate
- Long term contracts are rare, cash grant has expired, and financing is generally non-existent
- Most of them are simply not economically viable

The above, along with the limitations outlined for future grid projects in the Solar Act of 2012, have already caused a dramatic and naturally occurring slowdown in the true grid development pipeline

PJM Trends Reflect a Naturally Occurring Grid Project Slowdown

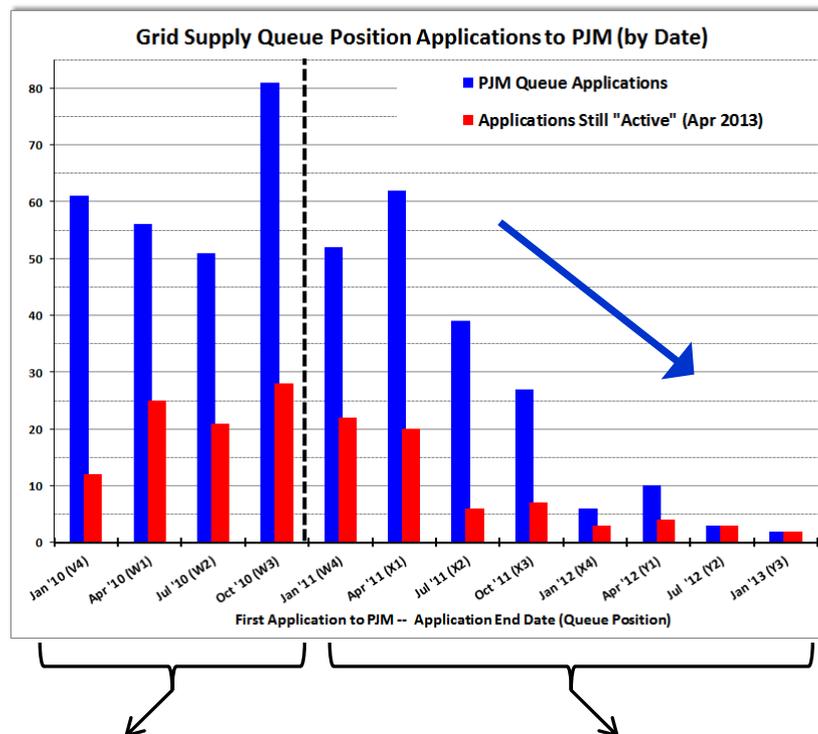


Criteria	Projects
Total Applications	450
Withdrawn Generally by customer withdrawal or by missing milestones that require more capital to continue.	259
Active Actual number is probably lower, but PJM's purging process for projects that miss milestones is known to be slow.	153
➤ W3 queue or earlier	86
➤ W4 queue or later	67

- Applications submitting notice to the BPU for Subsection S treatment would have been in the W3 or earlier queue (signifying that they began their development process before October 2010)
- There is a CLEAR *naturally occurring* slowdown trend in PJM grid project applications
→ PJM has received just 9 applications in the last 12 months

PJM Trends – There is a Known and Finite Pipeline

There is a known and finite pipeline of farmland grid supply projects whose *potential* to participate in the RPS is regulated by two separate but distinct sections of the Solar Act.



Subsection S

- 55 of 86 “Notice” projects qualified for Subsection S treatment based on their PJM Impact Study issuance date
 - Safe presumption that all truly active pre-W3 projects applied
- Projects eligible to seek Subsection S approval have been in development for **2.5+ years**
- Issuance of Impact Study is **not** indicator of commercial success
 - PJM estimates 75% of projects with an Impact Study will drop out, and 39% with an ISA will still drop out

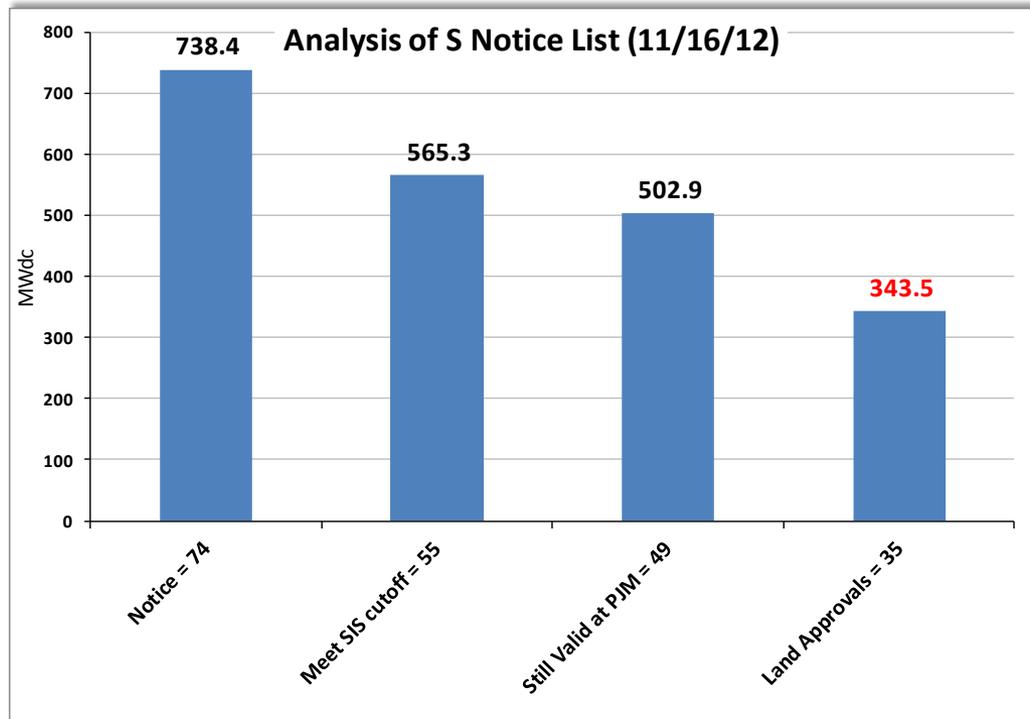
Subsection Q

- 67 projects in the W4 or later queue are limited to 80MW per year for next 3 years
- Most projects that applied just after the W3 queue would likely miss PJM, site control or other contractual milestones if they did not receive approval through Subsection Q

Analysis of the S Notice Projects

- **74 projects filed Notice of Intent to Qualify under Subsection S with the BPU by September 21, 2012. Notice of intent did not require proof that they possessed the required PJM System Impact Study to qualify.**
- **An unknown number of projects filed a follow-up application and supporting detail to the BPU by December 17, 2012**
- **The following analysis was conducted with known public data and via consultation with developers**

Analysis of the S Notice Projects



Criteria	Projects	MWdc
Timely filed Subsection S Notice	74	~738
Met System Impact Study cutoff date of June 30, 2011, demonstrating development since at least October 2010	55	~565
Met above criteria <u>and</u> remain in active status at PJM	49	~503
Met the above criteria <u>and</u> have land use approvals*	35	~344

*Land use approval does not imply economic viability to attain financing, or any schedule of being ready to construct.

Additional Considerations for the S Notice List

Additional data was collected from 23 projects representing 53% of the MW in the valid S Notice applications

- Those **23** projects reported spending **\$57.1** million to date on development made in good faith based upon statutes, rules and regulations in existence at the time encouraging such investment

Their “perfect world” commercial operation date suggests that even if they were approved pursuant to Subsection S and attain financing, those projects intend to slowly enter the NJ SREC program according to the following MW schedule (*and obviously not on the first day of the respective energy year*):

EY14	EY15	EY16	EY17	No data yet
84.6 MW	112.7 MW	11.5 MW	20.9 MW	113.7 MW

- Our analysis had a limited time to poll all participants. We expect to supplement the above as we collect more data.
 - **Despite this limited data, a clear picture emerges that market forces determine economic viability, and the market should not expect to see hundreds of new MW in June.**

Other legitimate considerations when analyzing the probability of the grid pipeline and its potential to impact the solar generation forecast:

- **Economic Viability:** Many projects are simply not economically viable
 - Interconnection cost is not eligible for federal incentive; a high IC cost is a cost item reducing economic viability
- **Construction Time:** Interconnection construction schedule for many proposed projects is 24-36 months
- **Milestones:** Projects with land use approval have milestone dates to complete their construction
- **Land Use:** Projects without land use approval by now (after 2.5 years of development) have a slim chance to attain approval
- **Financing:** Lack of long term contracts makes attaining financing near impossible
- **Cash Grant:** Many projects did not qualify for the cash grant safe harbor to reduce their financing costs

Observations

Pipeline forecasts should provide increased transparency to industry stakeholders so they can make informed decisions

- The current published pipeline is an unrealistic indicator of the future
 - It overestimates the pipeline, depresses SREC pricing, and harms all stakeholders in the solar program
 - A more relevant pipeline forecast will help to stabilize the market for the long term for all market participants, and reduce the volatility cost of financing by better predicting future SREC supply
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The Solar Act of 2012 contained three separate and distinct subsections designed to discourage grid projects on farmland by essentially phasing them out over a three year period through eligibility criteria

- The date criteria contained in Subsection S drew a hard line in the sand
 - PJM data confirms that this phase-out is well underway
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There is a known and finite amount of farmland grid projects that can ever participate in the NJ solar program

- The BPU is in possession of detailed data on all grid projects seeking approval under Subsection S.
 - Remaining projects will either seek their approval via the landfill/brownfield provisions of Subsection T, or be limited to the 80MW per year cap for each of the next three years
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Grid projects have a low probability of success; market forces determine economic viability and the approval to *qualify* for SREC generation does NOT mean that such projects will ever be built

- It is safe to forecast that only a fraction of the known universe of farmland grid projects will ever “reach the finish line” to participate in the SREC market
- Reported intentions demonstrate a controlled build strategy vs. fears of an immediate flood onto the market