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Mr. Scott Hunter
New Jersey Board of Public Utilities
44 South Clinton Ave.
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RE: Comments on Solar Development Volatility and Market Structure

In an effort to provide meaningful insight to the Board of Public Utilities ("BPU") discussion regarding the definition Solar Development Volatility, Alpha Inception ("Alpha") offers the following comments for discussion:

Solar Development Volatility

As discussed various times in during the passage of S-1925 it is the belief of Alpha Inception that S-1925was an attempt to correct the instability of the solar development market in New Jersey. New Jersey's Renewable Portfolio Standard ("RPS") on its face is a mandate to promote environmentally responsible power generation technologies with the purpose of creating a mix of generation, which serves to dampen the volatility of fuel prices by diversifying the generation mix. The solar specific carve-out, which is a subset of this RPS, was brought in to help foster the expansion of the solar development industry in NJ with the associated economic and environmental benefits.

In order to understand how to dampen such volatility in the future, one must first understand how the market got so volatile and then what aspects of that volatility are destructive and need to be dampened.

When the solar carve-out was initially legislated, solar energy was significantly more expensive than other competing renewable technologies. Because of their desire to promote solar generation the solar specific requirement was given a very high Alternative Compliance Payment ("ACP") to incentivize Load Serving Entities ("LSEs") to purchase the Solar Renewable Energy Credits ("SRECs").

In such a market, the forces of economics are such that a solar carve-out as well as a high ACP elevates the SREC price close to or at the ACP when the market is undersupplied by even a marginal amount. Sellers have no reason to sell SRECs for any amount less than the ACP. Buyers are required to buy to satisfy the RPS requirements regardless on the true economic supply/demand reality of the market. This was evident in the first few years of the program when SREC prices were consistently within a few dollars of the ACP.

In 2012, a combination of rapidly falling solar equipment prices and very generous federal and state incentive programs, resulted in the breakeven economics of solar

development quickly moving to development costs levels of $350 or less while the ACP and the market prices were still close to $650/MWh. This differential offered returns to developers, which could potentially exceed 40% over 10 years. With such artificially and unsustainable high returns obtainable, a solar building spree ensued. A once undersupplied market in 2012 quickly became oversupplied nearly two times over what the normal build rate should have produced by the end of 2013. The laws of economics suggest that such a dramatic overbuild would result in prices falling to a level that would remove the artificial economic incentive; however, a problem arises with respect to discrepancy between the time required for development and market price signals for short term SREC prices. Development pipelines and construction of solar projects typically take years and can involve a lot of upfront costs. Therefore, even when prices of SRECs drop to a level that would suggest developers stop building, development momentum can result in a substantial overbuild of development projects, even when the market is already oversupplied. This is evidenced by the completion rate of 80 MW in March 2012 when spot-market SREC prices had collapsed to $120/MWh, well below the breakeven economics of approximately $250/MWh at the time.

Without S-1925 to accelerate the RPS solar carve-out, the market would have remained oversupplied for a minimum of three years with no new solar project built in order to eliminate the surplus. In Pennsylvania, SREC prices have fallen to below $20/MWh. Overbuild in Pennsylvania is so significant that prices will likely fall much further and there may be no significant new completed developments in the state for 2-3 years while the oversupply is absorbed by the growth of demand.

The purpose of S-1925 was not only to absorb the oversupply in New Jersey; it also was intended to make sure that the cycle of oversupply/undersupply did not repeat itself. The RPS solar carve out volumetric increase in future years require/suggests a build-out of approximately 20-25 MW per month on average over the term. It seems the legislation has the intention that the BPU engineer a situation whereby the industry is kept within certain boundaries that will prevent the boom-bust cycle from being repeated or perpetuated. Alpha Inception suggests that if the 3-month moving average of solar build completions is more than 5 MW outside a range of 20-25MW per month, the market is likely approaching a level of volatility level that is counterproductive. Now if the BPU or another agency held the throttle to developers breaking ground on new projects, one could also measure this 3-month moving average and look to dampen such volatility. But since this throttle effectively does not currently exist, Alpha recommends looking at the completion rate as the primary indicator and the ground-breaking or approved construction as the secondary metric.

It is important to understand what drives development commitments. There will always be small minority of un-savvy investors or speculators that are willing to build new projects without contract or price signals, but these ventures will never drive the general market long term. The majority of developers require prices that allow for reasonable return on capital, typically between 8-15% on a levered basis.

To understand what drives the cash flows that in term drive this return, one must understand that in the PJM market (in which NJ is included) there are essentially 4 sources of cash for solar projects: tax incentives (ITC), electricity revenues, capacity revenues and SREC revenues. These 4 sources of cash must be able to prove out cash

flows that bear the cost of the development and required debt and equity costs.

So one must understand what timeframe or term is available for stable contracted cash flows. Under EDC programs these can stretch out 10-20 years and as a result projects can be built with a lower overall contracted cash flow. For projects that do not get these EDC contracts, power and capacity revenues can be hedged out approximately 5-7 years and SREC revenues can be hedged out about 2-5 years with a reasonable term of three years. It is ultimately this forward-strip price and its attendant volatility that drive investment decisions. Accordingly, this is what must be monitored and addressed to resolve the development volatility issues outlined above.

Conclusion

Market price volatility comes from a variety of factors, such as, small market size, illiquid and non-standard instruments, high transaction costs, and regulatory uncertainty or change. Additionally, there may be several outside factors such as power prices, solar equipment costs and federal or state tax incentives that can play a role in the fluctuation of market prices.

The negative effects of volatility in prices and developments are generally: 1) higher returns required in order to compensate for the risks inherently associated with this volatility and 2) a state based industry that is perpetually subject to boom/bust cycles year after year.

With an understanding of the history and source of volatility in these markets it is important to note that these problems can most easily be mitigated through market mechanisms which can control the artificially high and low SREC prices and thereby sustain a reasonable solar development growth rate that keeps pace with demand without surpassing it.

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