COMMENTS OF THE SOLAR ALLIANCE
ENERGY MASTER PLAN STAKEHOLDER MEETING
SEPTEMBER 24, 2010

The Solar Alliance is a group of approximately 30 of the largest photovoltaic (PV) solar development and manufacturing companies in the United States. We work together to advance state legislative and regulatory policies that support solar energy and help capture associated economic development opportunities. And we strive to increase the number and capacity of solar installations of all types, ensuring the market is vibrant, competitive and diverse.

Introduction

Over the last few months, there has been extensive dialogue between staff members from New Jersey Board of Public Utilities, the Bloustein School of Planning and Public Policy at Rutgers, Department of Environmental Protection, Department of Transportation and others represented in several working group discussions. As a result of this dialogue and substantial analytical efforts, we find ourselves in an excellent position to evaluate the real impact of the Energy Master Plan policies to date, and to refine these policies in such a way as to yield even greater social and economic benefits for the State and its citizens.

With regard to solar energy, we'd like to address some of the benefits that have already been realized as well as the longer term economic impact associated with the solar development trajectory envisioned in the Energy Master Plan and the Solar Advancement and Fair Competition Act. Within this, we'll share specific points regarding job growth, projected electricity savings for NJ rate-payers, and opportunities for SREC cost reduction.

We in the solar industry are compelled to constantly address the solar value proposition; working to expand benefits, while eliminating or minimizing system costs and ultimately rate-payer impact. Right now, we have the fantastic opportunity to do both.

Key Considerations

- First, the solar requirements in the EMP are modest. The Solar Advancement Act is a reasonable response to the opportunity and needs for economic development and clean electricity for New Jersey. In fact, Solar and other renewables can contribute much more than the current EMP assumes, and the State plays a critical role in getting there:
    - As demonstrated in previous comments by the Solar Alliance, solar alone can supply 14 GW of capacity, and provide a substantial percentage of the gap in new generation that the EMP predicts.
    - New Jersey has already put in place key building blocks to realize its solar potential. The Solar Energy Advancement and Fair Competition Act has set the stage for nearly 5GW of solar energy by 2026 and with further market enhancements solar will continue to deliver competitively-priced electricity.

- Moreover, the benefits of solar as an economic development tool should not be overlooked. With an installed base of over 6,000 systems in NJ, representing 200 MW of total capacity, this means more than 6,000 businesses and residents are now receiving the benefits of lower energy costs and a return on their local investment in infrastructure. Like CHP, EE and other distributed technologies, the systems and improvements are owned by or operated on behalf of host customers, who then directly benefit from predictably priced electricity and any associated incentives. In this way, Solar power acts as a powerful hedge against volatile and generally rising energy costs, allowing these New Jersey-based businesses to retain jobs and invest the savings in their operations.

- Second, the levelized costs of solar electricity should be considered within the context of a portfolio approach for the electricity mix in the State. The very purpose of the Energy Master Plan is to take a long-term view and enable policy makers to create a portfolio that balances short term costs versus long term rate stability. While development of PV may entail a modest (and declining) incentive in the short-term, this investment will facilitate the establishment of a self-sustaining solar market that is capable of delivering a significant part of the state's overall electricity supply at prices that are cost competitive with conventional generation technologies.
- Third, in considering costs, we must also consider countervailing benefits. In the case of solar energy, these benefits are both significant and varied.

Costs:

- For rate-payers, the current cost of solar in the average NJ residential utility rate is about $0.0017 or less than two tenths of a penny. (a)
- Relative to other technologies, the levelized cost of energy for solar is currently $0.13 - $0.30/kWh (depending on location, scale, technology, etc). For power plants, solar is cheaper than gas peaking and nuclear, and delivers energy at a discount to peak prices in four of the top ten metropolitan areas including New York, Philadelphia, Houston and Boston. (b)(c)(d)(e)
- And unlike most other technologies where costs are increasing, the cost of solar is DECLINING at about 3% per year (long term trend) which means the economics will continue to improve. (f)(g)

Benefits:

- To date, the New Jersey solar industry now includes about 200-300 companies employing more than 3,000 people. (h)
- It is one of the few segments in the NJ State economy that is growing and drawing increasing amounts of private investment. The state has about 200MW of solar energy installed and is installing about 10MW per month. In fact, the run rate of solar installations doubled from 2008 to 2009 and doubled again from 2009 to 2010.
- 200MW represents more than $700 million of leveraged investment on the part of residents, businesses and financial institutions.
- Solar energy reduces our in-state wholesale electricity prices. We estimate that 5,000MW of solar energy could reduce peak LMPs by more than $50/MWh which would generate about a $460 million annual benefit across all rate payers. Moreover, as energy prices increase, these benefits increase proportionally. (i)(j)(k)

Some may argue other technologies generate these same benefits. That may be true but the magnitude of the benefit varies based on the nature of the technology. For example, solar has been proven to create more jobs per MW of installed capacity than other technologies (6X more than nuclear and 8X more than natural gas and coal generation) driven in part by its distributed nature. It is also true that all technologies enjoy some form of subsidy whether it is Federal Loan Guarantees for nuclear, tax credits for fossil fuel producers or direct R&D funding by DOE for both. Any accurate comparison then must take into consideration all of the accumulated costs and all of the economic benefits.

These points are based on the CEEEP analysis, a review of current electric utility tariffs, the NJ CEP Revised 2010 Budget Order (dated 4/21/2010), an LCOE study by Lazard, and nuclear cost study by Duke University, a compiled list of solar companies in NJ, NJ CEP monthly reporting, solar pricing available from Open PV and Lawrence Berkeley National Labs, and analyses of the PJM pricing model that have been conducted by Black & Veatch, a team at SUNY Albany, JBS Energy and PJM themselves.

Policy Recommendations

Looking ahead, we have a great opportunity to further leverage solar as a key component of our generation mix, an opportunity that will deliver vast economic and environmental advantages in a time where we desperately need both. To build on our progress to date and to continue capturing this great opportunity, we offer these broad policy recommendations:

- Drive Scale and Efficiency: New Jersey will benefit from continued efforts to develop a diverse solar market that includes everything from small distributed residential systems to larger commercial and grid connected projects.
    - In light of this, we should address interconnection barriers by improving existing interconnection rules and by expanding SREC eligibility for projects interconnected at higher voltages.
    - Specifically, we support some of the language proposed in A2529, namely SREC eligibility for systems interconnected at 69kV or less.
- Promote a Stable Investment Environment: New Jersey has already realized substantial benefits from its renewable energy goals and now is not the time to create uncertainty in the market. Consistent state policy is the most important determinant of bringing down SREC prices in the coming years.
    - The policy mechanisms in the state for enabling lower priced SRECs are evolving but need enhancements, particularly through improvements to the existing SREC finance programs and the addition of long term SREC procurement in the BGS process.
    - We support improvements to existing SREC financing programs and we recommend exploring additional securitization options.
    - We also believe it is critical to encourage more LSE long-term contracting. To do so, we must set a proper 15 Year SACP schedule that establishes clear parameters and incentives for these LSEs.

In concluding, we would once again thank the Board, staff, and all those who participated in the previous EMP Policy Task Force discussions. We will continue to work with you and all parties to ensure that the goals of the state are achieved in the most cost effective means possible.

Supplemental Comments – SREC Markets (Pricing, Supply and Demand)

Regarding SREC prices, there is both a short-term, more speculative market and a long-term, more stable market for trading SRECs. As a result, there are substantial differences in the trading prices for SRECs:

- Through April 2010, the year-to-date overall weighted average SREC price for all trades was $573.77.
- According to Flett Exchange, a well-known broker of NJSRECs, the spot market has traded between $640 and $680 for this compliance year.
- According to BPU reporting, trades in this range (spot trades) accounted for about two-thirds (68%) of all trades and the weighted average of these trades was $676.
- We may assume then the other one-third (32%) was sold through long or short term contracts or auctions. Here the overall weighted average price was $373.
- Note: This contract/auction SREC price of $373 is nearly half of the ACP (currently at $693). Moreover, the weighted average contract price for buyers listed in GATS as LSEs exclusively was even lower at $276.14 while the weighted average contract price for all others was $411.02.
- Together, this suggests there is an active market beyond spot trades, but it is not yet a sufficient percent of the total to drive overall SREC prices to more reasonable levels.

Over time, SREC prices will be driven principally by supply and demand. However, as with any developing market, we should expect periodic, short-term variances in these market forces. The success of existing policy and market mechanisms then must be evaluated over a long enough period of time to avoid whip lash reactions.

Regarding near term SREC supply and demand, a short review of our progress to date gives us great insight on where we can expect the market to be in the next 12 to 18 months.

- According to NJCEP, New Jersey solar installations now provide nearly 200 MW of installed capacity from more than 5,000 projects.
- This number is increasing by about 8-10 MW per month according to SREC registration data or about 100 MW annually.
- There are now about 1.5 GW of merchant solar projects at various stages of the PJM interconnection process. If 15% of these projects reach commercial operation, that would add another 225MW.
- Taken together, this could conservatively put NJ at about 300 MW of installed capacity by June of 2011 (vs. an obligation of about 280 MW) and as much as 600MW of installed capacity by June of 2012 (vs. an obligation of about 400 MW). Of course, to achieve these levels of installed capacity, certain potential constraints will have to be resolved such as interconnection issues in the southern part of the State, SREC eligibility for projects connected at 69kV and below, and approval of an appropriate 15-year SACP schedule.

In conclusion, the data does not support concerns that the near term shortfall will persist. The industry is clearly responding to the goals set forth and we can expect a reasonable balance in supply and demand to be achieved over the next 24 months. Further, the likelihood of near term balance is increased as the noted constraints (interconnection issues, SREC eligibility, and SACP schedule extension) are successfully resolved.

References

Note: We use levelized cost of energy (LCOE) to compare the cost of generation technologies as it includes capital costs, O&M, and fuel costs. Further, solar should be considered against what it might replace (i.e. peak generators first, then intermediate and base load generators).

(a) EMP Additional Preliminary Data - Average Residential Utility Rate [http://nj.gov/emp/docs/pdf/Avg_Residential_Utility_Rate)(8-31-10).pdf] and NJ BPU CEP Budget Allocations.

(b) Lazard 2009 Study shows solar at $131-196/MWh and prices have declined since then. This appropriately includes Federal Tax incentives but no other local or state incentives. Further, Lazard points out that the LCOE would be under $0.10/kWh ($87/MWh) by 2012 using a leading solar company's projected costs. [http://blog.cleanenergy.org/files/2009/04/lazard2009_levelizedcostofenergy.pdf]

(c) NREL LCOE Calculator returns $0.174/kWh using 30 year term, 8% discount rate, $4/Watt Capital Cost (Average Selling Price, Commercial System), 30% ITC, 17% Capacity Factor. [http://www.nrel.gov/analysis/tech_lcoe.html]

(d) Lazard 2009 Study shows Gas Peaking at $216 - $334/MWh. [http://blog.cleanenergy.org/files/2009/04/lazard2009_levelizedcostofenergy.pdf]

(e) According to Duke University Study, "Commercial-scale solar developers are already offering utilities electricity at 14 cents or less per kWh. Duke Energy and Progress Energy are limiting or rejecting these offers and pushing ahead with plans for nuclear plants which, if ever completed, would generate electricity at much higher costs — 14–18 cents per kilowatt-hour according to present estimates." [http://www.ncwarn.org/wp-content/uploads/2010/07/NCW-SolarReport_final1.pdf]

(f) Lawrence Berkeley National Labs cites 3.5% per annum average decline. [http://eetd.lbl.gov/ea/emp/reports/lbnl-2674e.pdf]

(g) Open PV shows a 3.2% decline in the US over the last 9 years. [http://openpv.nrel.gov/gallery]

(h) Navigant Consulting - 100 MW of Distributed Solar PV Supports 1,500 to 3,000 direct and 6,690 to 13,380 indirect/induced jobs.

(i) NJ Peak Energy prices (LMP) in 2001 to 2009 ranged from $156 - $378/MWh. [CEEEP EMP Prelim Data 8/13/2010]

(j) Wholesale electricity price reduction analysis was completed by drawing on similar studies done by PJM, JBS Energy, and Mr. Richard Perez of SUNY Albany. [Mid-Atlantic States Cost Curve Analysis, JBS Energy, Inc., Dec 2000] [http://www.asrc.cestm.albany.edu/perez/directory/LoadMatch.html]

(k) Black & Veatch also completed a similar analysis of the proposed changes to Pennsylvania's alternative energy portfolio standard. They estimated the total wholesale price suppression benefit of an Alternative Energy Portfolio to be as much as $3.5 to 6.2 billion over the life of the study, a portion of which would come from solar with a solar target that was nearly identical to New Jersey's. [http://www.cfalleghenies.org/pdf/aepss_executive-summary.pdf]