September 14, 2010

COMMENTS OF THE VOTE SOLAR INITIATIVE ON THE ILLINOIS POWER AGENCY 2011 DRAFT PROCUREMENT PLAN

The Vote Solar Initiative appreciates the opportunity to provide comments to the Illinois Power Agency's 2011 Draft Procurement Plan. Vote Solar is a nonprofit grassroots organization with active members throughout Illinois and the U.S. Our mission is to address global warming, energy independence and economic development by bringing solar energy into the mainstream. Our members are ratepayers, present and potential solar energy system owners and solar business owners. Vote Solar helped develop the policy in HB6202 that created the Illinois solar ramp-up. Vote Solar has also been an active stakeholder in the development of solar energy programs and RPS compliance in California, Ohio, New York, Arizona, New Mexico, New York, Florida and many other states throughout the country.

Vote Solar commends the Illinois Procurement Agency on its effort to procure renewables as required by Illinois Power Act and HB6202. However, we suggest that the public benefit could be enhanced by making specific accommodations for developing a distributed generation solar market. Our comments are focused principally on describing the benefits of distributed generation, and make specific recommendations for market design necessary to produce the desired results . Specifically, we recommend that the IPA develop a mechanism to enable participation of behind-the-meter solar systems, set aside sufficient compliance capacity and budget, and host a workshop to develop program details.

I. Rationale for On Site Distributed Generation Procurement

Solar energy is modular, meaning that it can be sited at many different location types and deployed at many scales. While large wholesale solar projects are one approach to developing solar resources, wholesale solar procurement alone does not capture the full range of the benefits that solar energy can provide to the grid, Illinois ratepayers and the Illinois economy. Distributed solar allows Illinois to capture the benefits of avoided lines losses, deferred maintenance and upgrade costs, fast deployment of solar resources, and long term economic benefits spread around the state- these benefits are addressed in detail further in these comments.

There are several ways to capture the full range of distributed solar benefits. Distributed solar can be developed through multiple wholesale projects limited by nameplate capacity and through the promotion of 'behind the meter' solar projects. 'Behind the meter' or net metered solar projects are customer generator solar projects that produce energy to meet on site load. The latter has the additional cost benefit of an incentive level that is simply the marginal difference between the retail energy rates and the installed solar cost. In this instance, private investment is leveraged to minimize the project's costs.

Lastly, studies by national labs show that the key to low-cost solar installations is to develop long-term, sustainable, competitive local solar markets. Equipment costs are approximately half the cost of an installed solar system. Creating a market opportunity for distributed generation projects across the state will build a local solar industry with the key elements to bring down costs through growth in expertise and the ability to amortize overhead over multiple selling opportunities. The resulting economic and employment benefits will be a boon to the state.

The economic benefits of on site distributed solar generation

Distributed on-site customer generation reduces transmission and distribution losses, conserving energy supplied by utilities. Additionally, by facilitating diverse energy use and location of generation, customer generation can reduce fuel and disruption risks, and ultimately lower the cost of energy supplied by utilities and conserving rate payer assets.

While the economic benefits are abstractly apparent, at present the precise value of distributed solar has not been quantified for the state. We propose that the IPA remedy this situation by opening a workshop to study this issue. The Utility Commissions in Arizona and Nevada, among others, have taken this approach. Credible data on the value of ancillary services and peaking resources of solar could assist in the calculation of the additional costs and savings renewable procurement used in the RPS budget.

A. Optimal efficiency of electric utility facilities and resources

Enabling distributed generation can reduce utility peak load more cost-effectively and efficiently than peaker plant development and other strategies. On site distributed generation facilitates the proliferation of smaller, scalable generation to meet the near-term need, instead of building for an uncertain far-off load future and associated financial/ operational costs and risks. Further, by facilitating customer-sited generation, the value and effectiveness of distribution and transmission assets can be extended, providing value to all customers and making the grid more robust.

B. Equitable rates for electric consumers

On site distributed generation effectively reduces peak load, reducing the amount of the most expensive electricity that utilities must generate or purchase for their customers. On site DG can also relieve strain on distribution and transmission assets. Reducing peak load and delaying and/or eliminating the need for distribution and transmission investment saves money for all ratepayers.

C. Quantifying the value of distributed generation solar to the grid

Every solar panel installed provides economic benefits for all utility customers by reducing the overall cost of producing and delivering electricity. As photovoltaics are most productive during peak demand periods, the value of electricity generated by distributed solar systems is magnified.

Studies in other states have established high values for distributed generation solar systems. A study of California's system found the value of on-peak solar to be between $0.231-$0.352/kWh[1]. A study in the New York City area found that the avoided generation capacity benefits alone of PV was worth 9.1 cents/kWh, and when avoided transmission capacity and line losses were accounted for, the benefits rose to 16.6 cents/kWh[2]. These values are significantly greater than retail power costs (meaning the solar energy system owner may be cross subsidizing other utility customers).

Other benefits of distributed generation solar in Illinois include:

- Peak Demand Reductions—Properly oriented solar power systems can produce electricity that closely matches loads, thus reducing peak demand. Credit should be set based upon the effective load carrying capacity (ELCC). While solar generation is reduced on cloudy days, the PV availability factor on system peak days has proven highly reliable[3 4].
- Avoided Generation Fuel Cost—Each kilowatt generated by solar power systems displaces other utility generation on peak when fuel costs are highest, thereby reducing costs for all utility customers.[5 6 7]

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1 Smeloff, Edward: Quantifying the Benefits of Solar Power for California. January 2005. www.votesolar.org

2 Perez, P., T. Hoff, L. Burtis, S. Swanson, C. Herig: *Quantifying Residential PV Economics—Payback vs. Cash Flow, Determination of Fair Energy Value*. Proceedings of ASES 2003, funded in part by NREL.

3 Perez, P., C. Herig, S. Letendre: PV and Grid Reliability: *Availability of PV Power During Capacity Shortfalls*. Funded by NREL and NYSERDA.

4 Herig, Christy: Using Photovoltaics to Preserve California's Electricity Capacity Reserves. NREL.

5 Duke, Richard, Robert Williams and Adam Payne, 2004, "Accelerating Residential PV Expansion: Demand Analysis for Competitive Electricity Markets," *Energy Policy*. http://www.nrel.gov/ncpv/thin_film/pdfs/energy_policy_pv_expansion_residential_demand_issues.pdf

6 Orans, R. et al: Methodology and Forecast of Long Term Avoided Costs for the Evaluation of California Energy Efficiency Programs," Energy and Environmental Economics, Inc. and Rocky Mountain Institute, report prepared for the California Public Utilities Commission, October 25, 2004. http://www.ethree.com/cpuc_avoidedcosts.html

7 Wiser, Ryan, M. Bolinger, and M. St. Clair: Easing the Natural Gas Crisis: Reducing Natural Gas Prices through Increased Deployment of Renewable Energy and Energy Efficiency. LBNL, prepared for DOE. January 2005. http://eetd.lbl.gov/ea/ems/reports/56756.pdf

3 Perez, P., C. Herig, S. Letendre: PV and Grid Reliability: *Availability of PV Power During Capacity Shortfalls*. Funded by NREL and NYSERDA.

4 Herig, Christy: Using Photovoltaics to Preserve California's Electricity Capacity Reserves. NREL.

5 Duke, Richard, Robert Williams and Adam Payne, 2004, "Accelerating Residential PV Expansion: Demand Analysis for Competitive Electricity Markets," *Energy Policy*. http://www.nrel.gov/ncpv/thin_film/pdfs/energy_policy_pv_expansion_residential_demand_issues.pdf

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7 Wiser, Ryan, M. Bolinger, and M. St. Clair: Easing the Natural Gas Crisis: Reducing Natural Gas Prices through Increased Deployment of Renewable Energy and Energy Efficiency. LBNL, prepared for DOE. January 2005. http://eetd.lbl.gov/ea/ems/reports/56756.pdf

10 Perez, Richard et al, "Availability of Dispersed Photovoltaic Resource During the August 14th 2003 Northeast Power Outage", ASES proceedings, 2004. Available at: http://www.asrc.cestm.albany.edu/perez/2003-2004/outage.pdf

11 Letendre, Steven, and Richard Perez, "Understanding the Benefits of Dispersed Grid-Connected Photovoltaics: From Avoiding the Next Major Outage to Taming Wholesale Power Markets", June 2006. Available at: http://www.asrc.cestm.albany.edu/perez/2006/letendre-perez-Elejrnl-06-06.pdf

12 Reka Albert, Istvan Albert, Gary Nakarado, "Structural vulnerability of the North American power grid" preprint, http://xxx.lanl.gov/abs/cond-mat/0401084 (2004)

13 Bolinger, Mark, Ryan Wiser and William Golove: Accounting for Fuel Price Risk When Comparing Renewable to Gas-Fired Generation: The Role of Forward Natural Gas Prices. January 2004. http://eetd.lbl.gov/EA/EMP/reports/56756.pdf

- Avoided Transmission and Distribution Upgrade Costs—Because solar power is located where it is consumed, it can help avoid or defer the need for new power lines. Installations in load pockets maximize this value.
- Avoided Transmission and Distribution Losses—Since DG solar power is located at the point of use, line losses, typically 7-10%, are avoided. (Note that line losses are significantly higher during peak demand periods when solar is at its maximum production.)
- Energy Security—Local distributed generation can protect against catastrophic grid failure.[8] [9] [10]
- Fuel Diversification—Solar, with no fuel costs, provides a hedge value against volatile fossil fuel-driven electricity costs.[11]

D. Job creation and economic development benefits of distributed solar

Solar creates more jobs per megawatt than any other energy source. On an energy capacity basis, solar energy creates 35.5 person-years per MW, and on an operating basis, calculated over 10-years, solar PV creates 40% more jobs per dollar than coal[15]. Furthermore, distributed solar creates more jobs per MW than large utility scale solar projects[16]. Distributed solar development directly creates a broad range of jobs across various fields and education requirements including: sales, engineering, installation, finance, legal services and construction. The majority (approximately 75%) are related to construction and installation, representing local jobs that are by their nature non-outsource-able. The remainder (25%) are related to manufacturing. While the solar industry has a global manufacturing base, proximity to market is one significant factor in siting new plants. With a policy commitment to building a robust distributed solar market, Illinois could also expect to attract a new in-state manufacturing base and associated economic benefits

II. Recommended Changes:

In order to harness the benefits of distributed generation for the ratepayers of Illinois, we recommend that the IPA develop a plan for procuring distributed generation resources, and reserve sufficient compliance capacity and budget for the DG program.

A. Distributed Generation Procurement Plan

In order to get the benefits of distributed generation, the IPA should develop a program to enable market participation from behind-the-meter solar systems. Vote Solar recommends that the IPA create a separate procurement program for solar renewable energy credits. This program should include measures to ensure diverse market participation from all customer classes, market-responsive mechanisms to ensure best value for ratepayers and incentivize cost reductions as the

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15 Renewable Energy Policy Project, *The Work That Goes Into Renewable Energy,* November 2001.

16 Navigant Sept 2008 Economic Impacts of Extending the Solar Investment Tax Credit

market grows, and a design that facilitates stability and avoids boom-bust cycles. The details of this program should be addressed in a transparent workshop process.

B. Reserving Capacity and Sufficient Budget for Distributed Generation Plan in the Illinois Solar Procurement

The implementation of a distributed solar program would require setting aside and reserving compliance capacity within the 2011 procurement. The process of determining the distributed solar reservation percentages can be approached from several perspectives. One approach is to reserve distributed solar procurement and wholesale solar procurement in proportion to the contribution into the solar procurement budget by industrial and commercial customers and residential customers. Another approach would be to establish simple percentages.

C. Workshop

Given the numerous benefits of on-site distributed solar generation, we recommend that the Agency hold a workshop to develop a plan for the procurement of such solar resources. To include on site solar generation in the first compliance year for HB6202, a workshop would need to be held by early 2011.

We are grateful for the opportunity to comment, and look forward to supporting the efforts of the IPA in the work ahead.

Respectfully Submitted by,

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