RESPONSE TO DOE RFI ON NEM BENEFITS AND COSTS

FEB 28, 2014

Institution Name: Solar Energy Industries Association
Contact: Katie Bolcar Rever
Address: 505 9th street, 8th Floor Washington, DC 20004
Email: Kbolcar@seia.org
Phone: 202-841-7599

The Solar Energy Industries Association (SEIA) appreciates the opportunity to submit comments in response to the Department of Energy Solar Energy Technologies Office (DOE SETO) Request For Information on "Net Benefits and Costs of Distributed Solar Energy and Innovative Solar Deployment Models". SEIA is a very active participant on these issues in legislative and regulatory arenas in states across the country as well as in a variety of national forums.

Established in 1974, the Solar Energy Industries Association is the national trade association of the U.S. solar energy industry. As the voice of the industry, SEIA works with its member companies to make solar a mainstream and significant energy source by expanding markets, removing market barriers strengthening the industry and educating the public on the benefits of solar energy. SEIA advocates for all forms of solar energy including customer-sited and utility solar generation as well as solar heating and cooling.

All solar deployment provides significant value to all electricity consumers. Solar energy will be critical in meeting our country's goals of energy independence, national security, economic development, and the reduction of pollutants such as carbon dioxide. SEIA supports innovative solar deployment models while also maintaining support for policies such as net energy metering that have proven highly successful and critical for deploying distributed solar.

There is a growing body of work and experience on both of the topics addressed in this RFI. SEIA's comments do not attempt to summarize this work but rather provide high-level guiding principles.[1]

Category 1: Net Benefits and Costs of Distributed Solar Energy

[1] These comments represent the views of SEIA, not necessarily the views of any individual

a) All of the benefits of customer-sited solar generation should be quantified and adequately compensated.

Customer - sited solar generation offers many benefits to the electric grid system and by extension to non - solar customers, including but not limited to: reduction in utility energy and capacity generation requirements, reduction in system losses; avoidance or deferral of distribution and transmission investments; localized grid support including increased reliability benefits; fuel price certainty; and reductions in emissions and water use. The aforementioned benefits should be quantified, and solar customers should be adequately compensated for the value their solar energy is delivering to the grid.

The vast majority of discussions and decisions around solar valuation will happen in State Commissions. A Commission's obligation as a decision-making body is not just to ratepayers, but also to the public at large. Thus benefits of distributed solar that affect the public interest should be considered, including categories such as Security & Reliability Benefits, Environmental and Health Benefits, and Social Benefits. Including these benefits is consistent with the approach commonly used for other demand-side resources through a Societal Cost Test.

b) A holistic perspective is required when assessing the cost of integrating solar into the electricity system.

When assessing the cost of integrating solar into the electricity system, one must take careful consideration of two issues: 1) a broader evolution to a more distributed, renewable and intelligent grid that is likely to occur within the current utility planning horizon and 2) the need to invest in aging electricity infrastructure across the U.S.

Many technologies and forces are changing the electricity paradigm in the U.S. from a centrally generated and controlled system to one with more distributed energy resources and higher intelligence at the nodes. While the growth of distributed solar PV is one force in this evolution, the allocation of costs should not be attributed solely to this technology.

Our nation's electricity infrastructure is aging and requires investment whether or not solar and other forms of distributed generation are integrated into the electricity system. When assessing the costs of upgrading the grid for two-way power flow and variable generation, the counterfactual should be considered – is the transformer nearing the end of its useful life and requires replacement? Are the wires aging and in need of being reconductored regardless of PV and other DG deployment?

When utilities plan infrastructure upgrades, commissions should consider this evolution in the way we make and use electricity. One role of DOE could be in helping Commissions understand the types of technologies that they should be considering when reviewing utility infrastructure investment plans.

c) The process and methodology for developing monetary values to costs and benefits is critical

While considering all costs and benefits from a societal perspective is the responsibility of a Commission, the process and methodology for assigning monetary values to costs and benefits is arguably more important than selecting which cost and benefit categories to include. Balanced studies that evaluate both benefits and costs and use transparent and open methodologies and assumptions are critical to setting fair policies.

Some methodological issues may pertain to a single cost or benefit category, while others apply to all categories and may warrant their own separate discussion (e.g. the choice of a discount rate). SEIA offers the following recommendations regarding approach:

i) DOE SETO and its grantees should support the approach and recommendations developed in A Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation.

In October 2013, the Interstate Renewable Energy Council (IREC) published a document titled A Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation.[2] This guidebook offers a standardized approach for calculating the costs and benefits of DG and can help inform Commissions as they develop their methodology. The guidebook is based on a meta-analysis of best practices identified from 16 studies of DG cost-benefit studies from around the country. Importantly, the guidebook recognizes that the calculated value of DG may be different between utilities but the methodology should remain the same regardless of the company or jurisdiction. At a minimum, the Commissions should seek to answer the Key Questions identified in the guidebook:

- Q1: What discount rate will be used?[3]
- Q2: What is being considered – all generation or exports only?
- Q3: Over what timeframe will the study examine the benefits and costs of DG?
- Q4: What does utility load look like in the future?
- Q5: What level of market penetration for DG is assumed in the future?
- Q6: What models are used to provide analytical inputs?
- Q7: What geographic boundaries are assumed in the analysis?
- Q8: What system boundaries are assumed?
- Q9: From whose perspective are benefits and costs measured?
- Q10: Are benefits and costs estimated on an annualized or levelized basis?

[2] http://www.irecusa.org/wp-content/uploads/2013/10/IREC_Rabago_Regulators-Guidebook-to-Assessing-Benefits-and-Costs-of-DSG.pdf

[3] Consider that a social discount rate may be more appropriate for assessing societal benefits and costs than the private discount rate that is used for assessing individual business decisions.

SEIA also supports IREC's recommendations in response to each of these questions as specified in the report.

ii) Major uncertainties in key assumptions can have dramatic impact of valuation results.

DOE SETO, its grantees, and Commissions should be cognizant that certain inputs and assumptions involve uncertainties that can have a dramatic impact on valuation results. For example, altering a key assumption such as future natural gas prices can significantly change the avoided energy costs. Commissions should pay close attention to ensure that these inputs and assumptions are not selected in a manner that is unfairly weighted against DG. Where possible, it would be wise to conduct sensitivity analyses around these key inputs to understand their impact on the valuation. Some inputs with major uncertainties include:

- Inflation rate
- Future natural gas and other generation fuel prices
- Future load growth and load shape
- Future resource mix (including plant retirements)
- Future environmental rules or restrictions that may alter the resource mix

iii) Demand-Side Management (DSM) programs and measures offers experience on avoided cost valuation

Robust methodologies have already been established for evaluating the costs and benefits of Demand Side Management (DSM). Commissions should draw upon this experience where possible. One example is how to quantify Market Price Mitigation. Sophisticated techniques have already been developed to quantify this market price effect for DSM programs that may also be applicable for DG. A recent example is illustrated in the Avoided Energy Supply Costs in New England: 2013 Report,[4] which identified an avoided cost of 3.44 cents/kWh due to Market Price Mitigation (aka Demand Reduction Induced Price Effects) for the New England region.

iv) Valuation methodologies should reflect the differences between commercial and residential DG installations

Commercial and residential DG installations each have distinct characteristics that will undoubtedly lead to different valuations. For instance, commercial installations frequently feature tracking systems that provide a relatively higher capacity value than fixed tilt rooftop systems. Commercial systems also tend to have a higher fraction of energy consumed on site and thus fewer exports. SEIA recommends that Commissions identify value components that are likely to be different for commercial and residential DG and develop separate methodologies accordingly.

v) Particularly as valuation methodologies continue to evolve, Commissions should develop a technical reference manual for measuring DG value

[4] http://www.synapse-energy.com/Downloads/SynapseReport.2013-07.AESC.AESC-2013.13-029-Report.pdf

When Commissions work to develop methodologies, inevitably there will be disagreement between parties on which value categories are included and how they are computed. Furthermore, since this is a relatively novel issue, some methodologies are not yet well defined. We suggest that a constructive outcome of valuation proceedings would be the creation of a technical reference manual that is publicly available and periodically updated at least biannually. Commissions have developed similar manuals regarding energy efficiency.[5] Such a manual would offer stakeholders the opportunity to improve the valuation over time, as methodologies are refined.

vi) Work with an independent consultant

Accurately analyzing the costs and benefits of DG involves a significant time investment by individuals with strong technical expertise. While many Commissions undoubtedly have the capability to perform this analysis, SEIA recommends that Commissions hire an independent consultant who also has experience with avoided cost or DG valuation to conduct technical study work.

vii) Consider customer focus groups or polling as a method for assessing specific benefits

Some categories of costs and benefits involve values strictly determined by customer preferences (for instance, how much would customers be willing to pay for additional fuel price hedging?). Commissions should consider conducting customer focus groups or polling to understand how customers value these benefits. Examples of these benefit categories include:

- Ratepayer/consumer interest,
- Fuel price hedging.

d) In addition to categories traditionally identified by cost benefit analyses, the following categories and inputs/assumptions should also be considered.

DOE SETO and its grantees should also be cognizant of the fact that benefit categories may be different based on the level to which a utility is fully vertically integrated or deregulated.

Categories:

- Off-system Sales: DG reduces the net load that utilities must serve. Therefore, the addition of DG can free up generation capacity and enable utilities to increase their off-system sales of energy or capacity. These off-system sales have the potential to provide significant benefits to either ratepayers or shareholders and need to be quantified. Moreover, intersystem sales of capacity may be able to mitigate reductions in solar capacity value at higher penetrations.

[5] For example see: http://images.edocket.azcc.gov/docketpdf/0000150538.pdf

- Rate Stability: One important feature of DG is that its costs may be added in small discrete increments over time. Thus DG has the potential, similarly to procurement of independently-owned generation through long-term contracts that are paid over time, to benefit ratepayers by mitigating the rate impact by adding costs more gradually.

Inputs or Assumptions

- Planning Reserve Margins: Utilities must plan their system to have sufficient capacity to serve their forecasted peak load plus a reserve margin based on that peak load. Demand-side resources such as DG reduce the utility's load obligation, which has the dual effect of contributing capacity while also reducing the required reserve margins, thereby amplifying the capacity benefit from DG.[6] This aspect should be considered when valuing avoided generation capacity costs.

- Capacity Line Losses: As noted above, line losses are really an input to both avoided energy and capacity values. Line losses avoided by DG applies to both energy and capacity. Both of these line loss values should be estimated using their marginal values (i.e. during the times of day that DG systems are actually producing energy).

- Locational Value of Avoided Transmission and Distribution System Investment: One shortcoming of current methods for valuing DG is the difficulty in determining the locational value of DG installations on the utility's distribution grid. Locational value arises from the ability for DG to defer specific upgrades on the transmission and distribution system. Providing a better way to accurately determine this locational value of DG would be a major breakthrough as it could ultimately incentivize more targeted deployment of DG and potentially reduce overall system costs to all ratepayers. To the extent feasible, SEIA recommends that Commissions include the locational aspect of the DG valuation by obtaining utility-specific data on distribution expansion plans and load growth rates.

Category 2: Innovative Solar Deployment Models

Historically solar deployment has been facilitated by multiple policies that encourage demand and reduce barriers. Net metering, market start-up incentives, renewable portfolio standards and good interconnection rules. These remain critical policies. As markets mature and new markets are opened additional frameworks are being considered. SEIA recommends all policies meet basic principals and goals (see attached NEM and Rate Design Principles). For example, several states are considering a Value of Solar Tariff model, however more practical experience is needed before it

[6] For instance in Tucson Electric Power's 2012 Integrated Resource Plan (see: http://images.edocket.azcc.gov/docketpdf/0000135609.pdf), the company anticipated a retail demand of 2597 MW in year 2016 (see Table 4). This would suggest a 15% Planning Reserve Margin equal to about 390 MW. However, the actual Planning Reserve Margin specified in the plan is only 360 MW (see Table 5) due to the effects of distributed resources.

can be assumed that VOSTs will create a framework that facilitates long-term solar deployment.

MegaWatt Block Incentive Programs

The MW block approach for incentive allocation has proven successful, most obviously in California where the California Solar Initiative has resulted in over 1700MW of solar installations over 7 years.[8] Most recently New York/NYSERDA has proposed to implement a similar program [9]

Community and Shared Solar

SEIA strongly supports community and shared solar policies in addition to net metering and other policies that promoted customer-sited solar. The development of community and shared solar policies should not be at the expense of policies that support customer-sited solar and visa versa.

Value of Solar Tariffs

To date VOSTs have engendered debate on the variables and implementation can vary widely by state and are prone to subjectivity. As time goes on and more experience is had some of the anomalies.

Utility Procurement

While SEIA endorses and encourages third party ownership and project development, we also recognize the usefulness and need for utility procurement programs. We strongly encourage, however, such programs be transparent, competitive and not be a substitute for third party ownership.

-END-

[8] According to the CSS site there has been over 1,700 MW in installed or pending installations for the General Market and low-income CSI programs.
http://www.californiasolarstatistics.ca.gov/reports/agency_stats/

[9] NY-SUN 2016-2023 Funding Consideration and Other Program Consideration, Case 03-E-0188