NATURAL RESOURCES DEFENSE COUNCIL

Docket Control, Arizona Corporation Commission
1200 West Washington Street
Phoenix, AZ 85007

ORIGINAL

March 14, 2014

Re: NRDC Comments on Value and Cost of Distributed Generation (Including Net Metering)
EOOOOOJ-14-002 3

To whom it may concern,

Attached please find an original plus 13 copies of the Natural Resources Defense Council (NRDC) comments in response to the Commission's proceeding on the Value and Cost of Distributed Generation (Including Net Metering), Docket Number E-00000J-14-0023.

NRDC appreciates the opportunity to provide comments. Questions may be directed to Noah Long: nlong@nrdc.org and (415) 875-6193.

Since rely,

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Natural Resources Defense Council

Comments to the Arizona Corporation Commission

March 14, 2014

Re: Value and Cost of Distributed Generation including Net Metering, Docket Number E-00000J-14-0023

Introduction:

NRDC is a non-profit membership organization with over 1.3 million members and activists and a long-standing interest in minimizing the societal costs of the reliable energy services that a healthy economy requires. We have participated in ACC proceedings over the last several years with other stakeholders with a particular focus on representing our more than 8,800 Arizona members' interest in the utility industry's delivery of cost- effective energy efficiency programs, renewable energy resources, and other sustainable energy alternatives. In particular, we have advocated for increased cost-effective energy efficiency, performance-based incentives to the utilities for doing it well, and decoupling to remove the disincentive to invest in energy efficiency. This proceeding is closely related to our members' interests and our highest priorities: curbing global warming and building a clean energy future.

In this letter, we respond to issues raised in the comment letter by the Edison Electric Institute (EEI) in this docket February 18, 2014, and make recommendations to the Commission regarding the analysis it is about to undertake. As detailed below, we disagree with much of the EEI comment letter, and urge the Commission instead to embrace the approaches outlined in this letter.

We encourage the Commission to conduct the cost-benefit analysis of distributed renewable energy in a way that looks at all costs and benefits without a predetermined assumption that net metering causes overall cost shifting between customer classes or provides a subsidy to customers that generate renewable energy, as has been asserted by EEI, APS and some others.

The Commission staff's letter of January 27, 2014 lays out a reasonable range of costs and benefits to be considered in this docket. Other similar studies in recent years should be helpful in scoping this analysis, though it is appropriate that the Commission's analysis be tailored to Arizona's specific situation, including rate structure, generation and transmission investments, solar efficiencies and level of solar market penetration. In fact, several studies suggest distributed solar provides net benefits to the grid and society are generally equal to or greater than retail rates.[1] Thus we urge the Commission to recognize that net metering can be a cost-effective policy that leads to a lower overall total cost of service. Studies of the value and cost of distributed generation such as the Commission is currently undertaking can help test this assumption. However, before any changes to rates are considered, the cost-effectiveness of alternative rate structures should also be studied.

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[1] Recent reports that articulate a comprehensive scope of benefits and costs of distributed solar photovoltaic build-out include: Rocky Mountain Institute (2013) *A Review of Solar PV Benefit & Cost Studies*, available online: http://www.rmi.org/elab_empower; National Renewable Energy Laboratory (2013) *Regulatory Considerations Associated with the Expanded Adoption of Distributed Solar*, available online: http://www.nrel.gov/docs/fy14osti/60613.pdf; The proposed New York State "NY-Sun" program that would extend through 2023, approximately $1 billion or roughly $150 million per year to achieve the goal of at least 3,000 MW in new solar capacity, was concluded to be a prudent investment and will return significant monetary and environmental benefits to energy consumers. According to the NYSERDA study, wholesale price suppression is a significant positive impact whereby solar maintains maximum output coincident with summer peaking demand, account for over 80% of total benefits. Cite: at page 5-1, NYSERDA (2012) New York State Solar Study. Accessed online: http://www.nyserda.ny.gov/Publications/Program-Planning-Status-and-Evaluation-Reports/Solar-Study.aspx

Getting the value of distributed generation precisely right is complicated; implementing rates based on that value can also be challenging. Additional monitoring and metering equipment along with new accounting systems is needed to do it accurately and fairly. Commissions must also consider the costs of implementation, transition and uncertainty that come from policy change in favor of more precise value of solar. In cases where solar penetration is very low – which is true for the vast majority of distribution systems across the United States, both the costs and benefits are also very low and changing net metering policies brings significant risk, new costs and uncertain outcomes.

A full and fair cost benefit analysis is appropriate in the small number of states, like Arizona, with significant and growing distributed generation. The results can be used to enable the next stage of distributed solar policy. The results should assist integration and economic optimization of distributed generation by providing a better understanding of the services that distributed solar energy can provide, and the costs and benefits of those services as a foundation for more accurate pricing and market signals. We urge the Commission to make sure that if, based on the current study, it considers additional changes to rates including changes to net metering, that the alternative will lead to increases in renewable distributed generation commensurate with the full value to customers.

1) **The Commission should not assume cross-subsidization from net metering and should maintain opportunity for customer investment in renewable energy generation**

The purpose of this docket is to analyze the costs and benefits of distributed generation and, in particular, net-metered renewable energy systems to the grid. This requires detailed analysis of

the rate structure and costs and benefits listed in the staff letter in this docket. The context for this analysis is important: renewable energy provides a significant opportunity to reduce the very costly impacts from fossil fuels. Customers that invest in solar energy do so to benefit not just themselves, but to reduce the societal impacts from energy generation. The Commission must keep these benefits in mind when reviewing claims by EEI and others that setting a price for renewable distributed generation at too high a level harms other customers.[2] Should the Commission move to further reform net metering and set too low a price for renewable DG, it could harm customers by undermining the development of renewables and therefore force customers to pay higher costs for alternative generation, transmission and associated environmental impacts.

Solar, and distributed solar in particular, still make up a tiny fraction of total generation and peak load in Arizona. The Commission should continue to find opportunities to ensure the growth of clean, renewable distributed generation. EEI claims that while net metering is useful to jumpstart investment in clean energy, those markets have "evolved" such that the policy is obsolete, "While incentives such as limited net metering were instituted to jump-start nascent markets for DG systems, markets have substantially evolved and as a result these subsidies have served their intended purpose and should not be extended or expanded."[3] This assertion relies on the unsubstantiated claim that net metering includes some level of cross-subsidization and further assumes that current solar generation levels demand a new policy, without reference to any data on actual rate, cost or environmental impacts from net metering in Arizona.

[2] EEI comments, P. 2-3.
[3] EEI comments, p. 3.

We submit that net metering is intended as a 'reasonable approximation' at fair compensation for the energy produced by retail customers. Net metering policies are used in 43 states with a variety of underlying rate structures and varying, but mostly still very low rates of customer generated renewable energy.[4] Further cost benefit analysis can illuminate the particular effects in each state, but there is no analysis available on the specific costs and benefits of net metering in most of these states. As such, it should not be assumed that all of these rate structures cause cost shifting to customer renewable energy generators. Whether or not net metering causes any cross-subsidization between customers in any part of Arizona requires data-driven analysis based on the rate structure, solar efficiencies, solar penetration rates among various customer classes and locations (residential commercial and industrial customers have very different rates and usage profiles, for example), and other factors. While EEI asserts that because the energy purchased and energy produced do not happen simultaneously, the energy purchased must inherently be of lower value. This assertion is not substantiated by any analysis.[5] The energy produced by net metered customers could be of higher or lower value and depends on the customer class, time of day generated, and specific location on the distribution system; the value of that generation is likely to change over time and the utility's generation assets and typical customer usage patterns evolve.

Net metering policies provide a simple mechanism for approximating the value of distributed renewable energy without requiring the Commission to undertake a potentially contentious evaluation, like the one this Commission has elected to pursue. Each state must determine when an evaluation is appropriate based on its view that distributed renewable energy has become a

[4] See: http://www.dsireusa.org/documents/summarymaps/net_metering_map.pdf
[5] EEI comments, p. 5.

significant and growing portion of total generation, as the Commission has determined here. In our view, most states still have far too little distributed generation to require reopening net metering policies. In order to spur investment in distributed generation, most state regulators should be contemplating how to remove barriers to customer investment in renewable energy through facilitating interconnection, third party financing, incentives for location efficiency, new utility partnerships, or other mechanisms. Further, we submit that should the Commission find some level of cost-shifting after careful analysis of costs and benefits, it should make an independent determination on whether and how to adjust the rate structure with full consideration for the effects on customer investment in renewable energy.

The relatively robust growth of customer investment in renewable energy in Arizona puts it among the leading states for distributed solar generation. Still, the total level of customer generated renewable energy remains a tiny fraction of total consumption.[6] Approximately one percent of Arizona's major investor-owned utility (IOU) generation currently comes from distributed solar. Approximately 18,000 customers in the APS service territory have net metered systems as of early 2013.[7] While the load customer base are smaller, these numbers put APS roughly on par with PG&E, which has 100,000 customers using net metering for 981 MW of renewable energy generation[8] and expects to receive 1% of total generation from net metered solar energy in the coming years.[9] The Commission should act with an abundance of caution to ensure it does not upend the small but growing market for such investments, which can and

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[6] See: http://cleantechnica.com/2013/06/25/solar-power-by-state-solar-rankings-by-state/

[7] Data source: Navigant Consulting, Inc. (2012) *Net Metering Bill Impacts and Distributed Energy Subsidies,* available online: http://www.navigant.com/insights/library/energy/2012/net_metering_bill/

[8] See: http://www.beac.com/sites/default/files/events/2014-02-23_1807/pge_100k_2014.pdf

[9] California passed legislation last year that requires a new compensation structure for customer owned renewable generation that is scheduled to take effect as net metered generation reaches ~5% of peak load.

should continue to transform the grid towards cleaner energy. The Commission will have much more information to address the question of what rate structures are appropriate to allow for such investments given current production levels, cost and benefits after the analysis contemplated in this proceeding.

2) Rates appropriately reflect state policy and utility cost

Utility revenue recovery allowances are typically cost (plus return) based. However, customer electric rates are allocated across customer classes based not just on cost of service but also on law and policy. Business customers of various sizes and residential customers face differentiated rates because of state objectives to spur economic activity, protect low income customers, encourage conservation, and reduce peak consumption, among other purposes. Furthermore, utility payments for energy and capacity are influenced by a variety of factors, including market price, federally guaranteed allocations, renewable energy credit prices, etc. In that context, using rates to spur customer investment in clean energy is entirely appropriate.

The customer relationship with a monopoly utility is inherently different than that of a typical independent power producer, and the typical customer does not have the market position to receive the full value of their renewable generation from a market. Any attempt to create such a market would almost certainly create barriers to entry and transaction costs far too high for a typical behind the meter system. Thus, the Commission should protect customer renewable energy generators from utility monopoly power and ensure ability to receive the full value of investments that reduce utility load, provide clean energy to grid.

The Commission' cost benefit analysis should be based on a broad assessment of the value of distributed generation and any shift away from net metering to more complex and ostensibly

precise rates should be evaluated against a similarly broad set of costs and benefits. The concept of "cost-of-service" is not sufficient to evaluating these types of policy and rate design questions.

3) The Commission should not seek to discourage customer investments in renewable energy by discounting benefits and loading on all possible costs

EEI states "high DG penetration complicates the design and operation of the distribution grid and requires electric utilities to invest in new systems to assure that the grid remains safe and reliable."[10] While distributed generation does affect utility investment requirements, every utility must continuously invest in new systems to ensure safety and reliability. Many investments required or beneficial (for example: improved metering capabilities, distribution grid infrastructure improvements and improved system monitoring capabilities) even without new customer renewable generation. Customers that generate renewable energy should not be disproportionately saddled with these costs. The Commission should also fully count the significant benefits of distributed renewable energy.

A. The Commission should recognize that many grid investments provide multiple benefits and meet multiple needs and are not solely or even largely caused by distributed generation

Increased grid management capacity has a range of costs and benefits associated with demand and supply side management, demand response, vehicle electrification, capacity additions and other changes outside the scope of this proceeding. While high levels of DG penetration may present certain new costs to grid operators, the Commission should inquire

[10] EEI, p. 8.

whether these investments have other benefits, or would have happened anyway.[11] To the extent that DG generation is responsible for incremental system investment requirements, the Commission should balance that cost with the avoided costs of other capacity and transmission investments. The costs associated with adding distributed generation are potentially lower than avoided investments in additional transmission, generation or capacity.

B. The Commission should consider the full range of benefits from distributed generation

Undervaluing distributed generation will result in underinvestment in clean energy. Doing so would hurt customers because they would be forced to instead pay for utility over-investment in alternative generation and transmission and because they would be exposed to greater externalities, including pollution, water use and environmental impacts resulting from dirty energy consumption.

- Reduced transmission and other infrastructure investment caused by increased distributed renewable energy should be fairly accounted. Significant distributed generation can certainly delay or eliminate transmission and capacity investments, especially if sited in constrained locations and combined with energy efficiency and demand response capability. The Commission should include reasonable forecasting of the need for transmission and distribution system investments. Assuming distributed generation has no value until the cancellation of future projects would

[11] EEI states that DG causes costs, but without inquiring as to the benefits or whether the investments would have happened anyhow: "As DG installations increase then utilities must invest in new control systems, modify operating procedures, and train operating personnel to safely and reliably accommodate DG systems on the grid." p. 5-6.

create an impossible 'Catch-22'[12]: if distributed solar is undervalued and customers stop investing in it, then it will not defer projects; if it is appropriately valued, grows steadily and incorporated into planning, utilities will not need to plan and cancel new investments because the need for those investments will never arise. We recommend the Commission rely on analysis and modelling of future growth to provide a reasonable avoided cost estimate. Furthermore, the Commission should include analysis of peak load reductions from distributed generation among all customer classes[13] and consider the opportunities for increased distributed generation with other clean energy programs to achieve significant capacity reductions.

- EEI refers to 'rules' that prevent accounting for the capacity value of distributed generation.[14] EEI does not reference what rules are at issue, or how they prevent appropriate accounting. Arizona is not part of any of the larger eastern RTOs and resource planning is clearly under the jurisdiction of this Commission. To the extent these rules are identified in Arizona, the Commission should seek to change them to allow full accounting for distributed renewable energy benefits.
- Avoided fuel and generation costs should be fully considered. EEI claims that avoided generation and fuel costs are already reflected in reduced rates and should not be included in the value of distributed generation.[15] Of course, many of the lower

[12] EEI Comments, p. 7, "Transmission and Generation Capacity Costs Are Not Avoided Until actual projects are demonstrated to be deferred or canceled[:] EEI believes that although avoided transmission and distribution may be theoretically relevant to determining adequate compensation for DG, the measurement of such components is too speculative at this time."

[13] EEI asserts that "peak demand of residential customers occurs later in the afternoon and in the early evening after solar resources have substantially reduced or even stopped producing energy (ie., peak-demand is not well correlated with solar output)." p.7.

[14] EEI comments, p.7.

[15] EEI comments, p. 9.

benefits of distributed renewable energy reduce rates for all customers, but that is a reason *for* fairly valuing those resources.

- Reduced wholesale market prices caused by dampening of demand as a result of increased distributed renewable energy should be accounted for. These benefits have been calculated for renewable energy in other contexts and should be considered here.[16] EEI is unnecessarily dismissive of the Commission's ability to account for market and price benefits, including reduced market prices for energy and reduced purchases of alternative clean energy for compliance with the state RPS.[17]
- One of the key benefits of solar and other forms of clean energy is reducing the health and environmental impacts from fossil fuels. Fossil fuels cause premature mortality and increased morbidity in thousands of people every year. These benefits have been reliably counted in numerous proceedings throughout the country and should be considered here. [18] Disallowing counting of benefits from avoided pollution would cause under-investment in clean energy. Even if these values are not included in payments to customers for renewable energy, they can be used in a full cost-benefit analysis, and used to determine a net-metering policy that will spur appropriate levels of investment in clean energy. Furthermore, EEI's argument that these benefits are not elsewhere included in utility costs is false[19]: Utilities subject to renewable portfolio standards pay for the renewable energy credits (RECs) in addition to the

[16] See, e.g., Wiser, R., Bolinger, M. and M. St. Clair. 2005. Easing the Natural Gas Crisis: Reducing Natural Gas Prices through Increased Deployment of Renewable Energy and Energy Efficiency. LBNL-56756. Berkeley, Calif.: Lawrence Berkeley National Laboratory. http://eetd.lbl.gov/ea/ems/reports/56756.pdf

[17] EEI comments, p. 9.

[18] See, for example: http://www.nap.edu/catalog.php?record_id=12794

[19] EEI states, "If societal benefits are not charged for in utility rates, they should be excluded from the methodology for developing rates to distributed generators." p. 10.

energy payment. RECs generally include the associated emissions profile of the generating facility. While REC values are not directly tied to estimates of reduced pollution, they purchased as a result of state policy to reduce emissions and the other environmental impacts of electricity consumption.

- EEI's claim that the costs of carbon are unknown and too speculative are undermined by their own citation to the Federal estimate of the social cost of carbon, which is used for the purposes of establishing cost effective federal rules affecting carbon emissions.[20] Furthermore, EPA is currently drafting a rule limiting carbon emissions from existing power plants.[21] Uncertainty about the specific cost is not the same as agreement that the cost is zero. Assuming no cost would be equivalent assuming these pollutants have zero cost, which is far outside the bounds of any reasonable estimate.

Conclusion

We appreciate the Commission's consideration of these issues. We hope to work with the Commission to develop a robust analysis of the many important questions in this docket.

[20] See: http://www.epa.gov/climatechange/EPAactivities/economics/scc.html

[21] See: http://www2.epa.gov/carbon-pollution-standards/what-epa-doing#reducing

Submitted,

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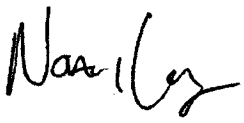

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