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July 18, 2014

Hon. Kathleen H. Burgess
Secretary
NYS Public Service Commission
Three Empire State Plaza
Albany, NY 12223-1350

Re: CASE 14-M-0101 - Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision

Dear Secretary Burgess,

Enclosed please find Comments by the Alliance for Solar Choice *Track I Policy Issues & Potential Outcomes* and *Selected Track II Questions.*

Thank you in advance.

Respectfully submitted,

David R. Wooley
dwooley@kfwlaw.com
510-314-8207 (office)
415-271-1135 (cell)
Counsel to the Alliance for Solar Choice

BEFORE THE
NEW YORK STATE PUBLIC SERVICE COMMISSION

Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision	CASE 14-M-0101

COMMENTS BY THE ALLIANCE FOR SOLAR CHOICE

TRACK I POLICY ISSUES &
POTENTIAL OUTCOMES

SELECTED TRACK II QUESTIONS

Introduction and Summary

The members of the Alliance for Solar Choice (TASC) compliment the Commission and Staff for this historic initiative. Founded by the largest rooftop companies in the nation, TASC represents the vast majority of the rooftop solar market. Its members include: Demeter Power, SolarCity, Solar Universe, Sungevity, Sunrun, and Verengo. They are responsible for many thousands of solar installations serving businesses, residents, schools, churches and government facilities in New York State. TASC's member companies have brought hundreds of jobs and many tens of millions of dollars of investment to New York's cities and towns.

TASC agrees with the Commission's objectives as set forth in the Order Instituting Proceeding.[1] Technological advances in data management, communications, distribution system management, distributed generation and storage require new regulatory structures and markets in order to expand customer choice and control long-term costs. We hope this proceeding will establish a system of regulation and markets that is open to and fully integrates all cost-effective Distributed Energy Resources (DER).

It is time to reconsider the utility business model and to give customers more choice and control over their monthly electric bills. New York needs to reduce peak demand, maximize utilization of behind-the-meter resources, reduce fossil fuel dependence and redirect

[1] New York State Public Service Commission, Order Instituting Proceeding, Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, April 25, 2014.

infrastructure investments toward a more distributed model. Utility earnings and incentives must be aligned with these objectives.[2]

TASC's vision for a restructured utility industry in NY is one that ensures open access to the distribution grid at reasonable and predictable prices for all clean DERs. NY's electric utilities should provide access to essential facilities under their control to ensure customers can choose new energy technologies and sell services into the electric system.

We envision a future in which interconnection of behind-the-meter generation is fast and easy, and where owners of clean distributed generation are fully compensated for the benefits provided to the electric system and society. The most efficient way to do this is to maintain and improve current net energy metering (NEM) and interconnection policies and develop markets that enable such systems to provide ancillary services to the bulk power market. Net metering is fully consistent with the Commission's vision, as it is easy to administer and sends appropriate price signals to customers.

TASC strongly disagrees with suggestions in the Staff Paper that net metering shifts costs between participants and non-participants. Numerous studies in other states show that benefits of net-metered systems to non-participants exceed costs. After consulting with stakeholders on a methodology, the Commission should support a well-designed study of this question.[3]

The Distributed System Platform Provider (DSPP) should maintain and operate the distribution system in a manner that gives all customers the option to invest in DG. Interconnection studies for small, behind-the-meter generation should be accomplished as part of regular distribution planning. Distribution planning should proactively accommodate growth in distributed renewable generation, storage, demand response and energy efficiency. Non-wire alternatives should be preferred options in distribution planning.

Renewable behind-the-meter generation is an effective form of load modification. System upgrades needed to accommodate small residential and commercial PV systems should be recovered in the same way as other investments to serve load. Customer-sited generation produces significant system and societal benefits and any integration costs should be recovered across the entire rate base of the applicable customer class. This is consistent with current California policy and is a proposed approach in Hawaii.

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[2] New York State Department of Public Service, Staff Report and Proposal, *Reforming the Energy Vision,* Case 14-M-0101, April 24, 2014, Pg. 53. (Staff Paper).

[3] See discussion at pages 5, 10-12, referencing studies on benefits and costs of net metering and distributed solar.

Distribution utilities' earnings potential should be realigned to encourage utilities to support customer choice, expand DER, and lower long-term costs. Distribution utilities should not be allowed to own behind-the-meter generation.

Scope and breadth of the vision described in the Staff Paper will take time to achieve. The Commission and Staff should initially focus on several early actions to expand DER.

- Remove caps on net metering and continue to exempt customer-sited systems from standby fees beyond the May 3, 2015 in-service deadline.
- Establish performance incentives that reward utilities for enabling customers to invest in distributed generation.
- Retain incentives for distributed renewables, energy efficiency and storage (and combinations of these technologies) through system benefit charges and other funding mechanisms.
- Provide customers and their energy service providers with greater access to billing data.
- Improve interconnection and permitting processes for behind-the-meter generation.
- Make changes to more fully compensate behind-the-meter systems for system and societal benefits (see discussion below at page 14-15).

TASC greatly appreciates the opportunity to submit comments on selected questions posed by the Administrative Law Judge and in the Staff Paper. TASC did not address all questions posed, but plans to fully participate in all stages of this proceeding and may comment later on matters not addressed herein.

TRACK I – THE DISTRIBUTED SYSTEM PLATFORM PROVIDER

Before turning to individual questions, TASC offers the following summary of our main points on Track I Issues and Outcomes.[4] A key objective of this proceeding should be to effectuate customer demand for increased access to cleaner, more efficient, and lower cost electricity supply. The new utility structure should be consistent with this objective.

[4] Case 14-M-0101 - Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, *Ruling Posing Questions On Selected Policy Issues And Potential Outcomes, Establishing Comment Process, And Revising Schedule* (Issued June 4, 2014).

TASC believes that the Commission has pursued this objective for many years and played an important leadership role nationally through its policies to expand renewable energy, energy efficiency, storage and demand response. Going forward, it is important to maintain that momentum.

To date, the two principal policy drivers for clean energy investment have been: 1) funding mechanisms to incentivize customers to invest in energy efficiency (EE), and renewable energy (RE); and, 2) net metering, interconnection and other policies that enable customer to invest in distributed renewable generation. At least in the early stages, the Commission should strengthening what is working and reduce remaining barriers to clean energy investment by customers, businesses and utilities. This suggests several near term priorities.

Retain Funding Mechanisms To Build Investment In EE, RE, DR And Storage

NY currently provides over $350 million per year to support investment in cost effective energy efficiency, distributed and utility-scale renewable generation, storage and related research.[5] One lesson from the utility restructuring efforts of the mid-1990s is that market mechanisms generally did not emerge to displace the need for this financial support for clean energy alternatives. The system and societal benefits of this funding are significant, and New York has a successful record of using these funds to develop markets, promote investment and job growth, reduce pollution and create new, cost-effective products and services.

NYSERDA currently manages a number of successful programs to expand energy efficiency, renewables, and storage in New York, including NY-Sun. We see no reason to change the management of this and related programs.[6] We believe the Commission should renew its commitment to a long-term funding strategy to expand energy efficiency, renewables, and related technologies. The overall funding level should be sustained for a 10-year period.

A 10-year commitment would align system benefit funding to the NY-Sun programs and to U.S. EPA's recent Clean Power Plan. NY will soon need to submit a State Implementation Plan to reduce carbon emissions consistent with 2020 and 2030 requirements. A 10-year Clean Energy Fund will go a long way towards meeting NY's requirement.

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[5] See, New York State Renewable Portfolio Standard Annual Performance Report Through December 31, 2013. Final Report. March 2014; http://www.nyserda.ny.gov/Publications/Program-Planning-Status-and-Evaluation-Reports/SBCIV-Documents.aspx. Additional funding for clean energy alternatives, beyond that described in this report, is provided by the New York Power Authority, Long Island Power Authority and investor owned utilities.

[6] See contrary suggestion in Staff Paper at page 21.

Retain And Strengthen Net Metering

The Staff Paper incorrectly assumes that net metering results in cost shifting.[7] TASC believes evidence from multiple studies shows that residential customer-sited renewable generation often produces more benefits than costs.[8] There is no basis to conclude net metering shifts cost between participating and non-participating consumers in New York.

Net metering is an efficient and administratively simple means to compensate customers for system and societal benefits of their investment and is a mechanism to which customers have responded. Contrary to the view expressed in the Staff Paper,[9] market mechanisms may not be sufficiently stable or send predictable signals to encourage customers to invest in DER. Any attempt to replace net metering with market mechanisms will likely impose additional regulatory burdens on the Commission to determine appropriate levels of compensation and re-educate customers. Proposals to change net metering are not worthy of Commission attention today.

To strengthen net metering, TASC asks the Commission to permanently exempt customer-sited renewable generation from standby charges. The current exemption expires on May 31, 2015. The Commission should also remove caps on net metering for distributed renewables, currently set at 3% of utility peak load.[10] These policies are arbitrary anachronisms. They consume valuable Commission and Staff time in periodic proceedings to revisit the caps, and are inconsistent with the Commission's vision and goals.[11] See Comments of SolarCity in this Case, filed July 18, 2014, at pages 13-14 and 20.

The Utility Should Not Own Any Behind-The-Meter Generation

As the provider of reliability and power quality, and integrator of widespread DER, the DSPP should not own behind-the-meter generation.[12] The public interest is maximized when regulation confines the reach of a utility's monopoly power to services that cannot be offered

[7] Staff Paper at 18.
[8] See discussion below at pages 10-12.
[9] Staff Paper at 20.
[10] See Staff Paper at 21. See also, comments of the Vote Solar Initiative in support of the petition of Hudson Valley Clean, for an Increase to the Net Metering Minimum Limitation at Central Hudson Gas & Electric Corporation, Case 14-E-0151, July 7, 2014.
[11] See discussion below at pages 15 and 23.
[12] Our position is contrary to language in the Staff Paper at page 60.

through competitive markets. See Comments of SolarCity in this Case, filed July 18, 2014, at pages 4 and 19.

Restructure Utility Earnings

A priority for the Commission should be to establish performance-based incentives that give utilities financial rewards for helping to expand customer choice and investment in clean energy. We envision a future in which close to a majority of earnings are from performance-based incentives, with return-on-equity declining as a share of earnings. A gradual shift of this nature could realign utility incentives toward the goals described in the Staff Paper. See Comments of SolarCity in this Case, filed July 18, 2014, at pages 14-15.

Create Better Rules for Access to Customer Data

While the Commission has made progress to make customer data more accessible, more work is needed.[13] It is hard to imagine that new products and services will emerge until customer data is much more accessible than it is today.

Improve Interconnection And Permitting For Behind-The-Meter PV Systems

This is another area where the Commission has made progress, most recently in its 2013 amended interconnection standards. Subsequently, the Federal Energy Regulatory Commission adopted changes to its Small Generator Interconnection Procedures,[14] which contain several innovations that we hope New York will adopt, including a solar-specific interconnection screen. The Commission should continue to improve its interconnection standards, and consider best practices adopted or under study in California, including: distribution group study process, study tiers, interconnection data reporting, and interconnection rules for storage.

Integrate NY REV With Compliance Planning To Meet Federal Carbon Standards

[13] The Staff Paper at page 41 states:

> Further work is required to define the conditions under which customer-specific energy usage data can be shared with non-utility parties. The recently initiated phase of Case 12-M-0476 should explore best practices related to data ownership, data interchange and rules for third-party data access, incorporating appropriate consumer privacy protections….

[14] 145 FERC ¶ 61,159 Federal Energy Regulatory Commission, 18 CFR Part 35, RM13-2-000; Order No. 792, Small Generator Interconnection Agreements and Procedures (Issued November 22, 2013).

Changes in the NY electric industry structure should account for proposed federal CO_2 emission controls. The new structure should contain incentives for utilities, energy service companies and consumers to use DER to lower carbon emissions.

Distribution Planning, Price Setting and Aggregation Services

The DSPP should be responsible for distribution system planning that fully integrates distributed energy resources as alternatives to traditional T&D wire solutions. TASC endorses the view advanced by Advanced Energy Economy (AEE):

> "DSPPs should be required to demonstrate to the PSC that they have fully considered, analyzed and integrated DER into the DSPP planning process, not as an afterthought but as an essential element."

DSPPs should develop the capability to "see" DER resources, and potentially manage them, so that they can design and build-out the distribution system in a manner that captures their value for system planning and operations.

The DSPP should serve as the local balancing authority, but have no regulatory authority or independent ability to determine prices for services and grid access. DSPP could develop pricing structures for DER products, but approval should stay with the Commission as an independent body charged with protection of long-term public interest.

As a general rule, costs of performing the DSPP market functions should be covered by rates charged to all customers, since benefits from the DSPP role would be widely shared. There may be some circumstances where the DSPP could charge for aggregation services, but the charges should be cost based, and facilitate (not become a new barrier to) DER.

In the following section we address specific questions or policy issues posed by the Administrative Law Judges and Staff. The bolded roman numerals correspond to numbers assigned to specific issues in the Ruling inviting comments. Since we have not tried to address every issue, the text below skips some roman numerals.

I. Potential REV Outcomes & Matrix

The June 4th Ruling seeks comment on whether the anticipated outcomes, identified in the Outcomes Matrix, are appropriate results the Commission should strive for in this effort.

Category I: Advancement of Clean Energy

TASC recommends that the subjects and objectives of this Category be expanded and made more specific. The goal should be to achieve all cost-effective DER, with earnings structure set to ensure that utilities fully buy into this objective. The goal associated with clean generation should specify that both utility-scale and distributed renewable generation should be pursued. We also recommend that a subject be added on storage and demand response, with a goal to expand storage and storage/PV systems, which enable renewable generation growth.

Category II: Customer Engagement

TASC agrees with the subjects and goals of this objective, but would add as a goal, "increased customer participation in DER services and adoption of DER technologies."

Category III: Safe, Reliable & Resilient Systems

TASC agrees with the subjects and goals of this objective, but would add the following additional goals:

- Achieve greater visibility into the status of the distribution system, customer power usage and behind-the-meter DER. See Comments of SolarCity in this Case, filed July 18, 2014, at page 8.

- Ensure that targeted DER is fully integrated into distribution system planning and operations and receives primary consideration as a non-wire alternative to traditional distribution system investment.

- Increase customer access to electric power during emergencies.

- Accommodate all customers who wish to install clean DER.

Categories IV and V: Operational Efficiency & Innovation

TASC agrees with the subjects and goals of these objectives.

Category VI: Customer Satisfaction

TASC recommends this objective should specifically refer to enabling consumers to control their own power use via on-site generation, demand response, storage and energy efficiency.

II & III. Optimal Ownership Structures for Distributed Energy Resources and DSPP Identity

The June 4th Ruling seeks comment on analysis presented in the Staff Paper at pages 24-28 on preferable forms of utility engagement in DER and whether incumbent utilities, or an independent entity, should serve as the DSPP.

The DSPP should:

- Operate the distribution system reliably.

- Undertake distribution system planning to acquire facilities needed to maintain a reliable system and accommodate customer choice of distributed renewable energy.[15] This would involve:
    - Detailed, circuit-by-circuit analysis of where DG is likely to be located on their systems;
    - Include both historic and projected DG in forecasts of distribution-level demand, with regular T&D plan updates to reflect forecast changes;
    - An operational assumption that major T&D investments will not be approved by the Commission unless utilities have first comprehensively evaluated DER options.[16] See Comments of SolarCity in this Case, filed July 18, 2014, at pages 13.

- Encourage consumers to invest in EE and behind-the-meter generation and provide incentives where DER can improve or lower cost of T&D operations.
- Identify long-term T&D system investment needs, and allow targeted EE, RE, DR and storage to compete as non-wires alternatives. [17]

- Create/manage a market for economic and emergency demand response and storage.

[15] A recent paper by Sandia National Laboratories and the Interstate Renewable Energy Council proposes an approach to proactive planning for growth in DG called Integrated Distribution Planning (IDP). IDP is drawn from a variety of efforts being contemplated or implemented in utilities across the United States. These efforts seek to establish methods by which utilities proactively plan for DG growth and anticipate distribution system upgrades necessary to accommodate both DG and load growth. *Integrated Distribution Panning Concept Paper: A proactive Approach for Accommodating High Penetrations of Distributed Generation Resources*, Interstate Renewable Energy Council, May 2013, www.irecusa.org.

[16] The Commission should be clear that rate basing of T&D investment is only allowed if it is the least-cost solution consistent with state goals. By "least cost" we mean not just short-term cost considerations, but also environmental factors, reliability, equity, risk, and any other goals/outcomes that are part of the REV framework.

[17] The Massachusetts Department of Public Utilities (DPU) on June 12, 2014, issued Order D.P.U. 12-76-B requiring the state's utilities to submit ten-year "grid modernization plans." D.P.U. 12-76.

- Utilities should establish communications and monitoring systems that allow it to accommodate increased customer-owned renewable generation and target EE, RE, DG and DR resources to solve anticipated reliability or cost problems.

To perform these tasks effectively, the DSPP should not own behind-the-meter generation. Customers currently have access to completive suppliers of PV and other forms of clean DG. Competitive markets for DER would be fundamentally undermined if utilities were allowed to own behind-the-meter generation. DSPP cannot effectively promote innovation, efficiency and cost reductions to benefit consumers if their shareholders' fiduciary duties drive them to advantage their own generation investments. The resulting price distortion and customer confusion will slow the deployment of clean renewables in customer-sited configurations. We do not believe that ratemaking incentives can effectively remove this bias.

IV. Benefits and Costs

We have been asked to discuss the preferred analytical framework to assess benefits and costs, with particular attention to the different ways that benefits and costs (including environmental externalities) should be considered in various stages of this initiative, along with methodologies and tools for each stage.

An underlying principle to be recognized, before assessing how to measure benefits and costs of distributed generation, is the fundamental right of customers to control their own consumption and generate their own power. Any treatment of costs and benefits must respect this principle.

The Staff Paper seems to suggest that net metering should be replaced by some other mechanism based on the costs and benefits of behind-the-meter generation. The underlying rational seems to be an assumption that net metering shifts cost from customers with on-site generation, to customers without on-site generation. Staff Paper at 18, 62. There is, however, no empirical evidence that costs of net metering policy to non-participants exceed the benefits to such customers in New York.

We understand that NYSERDA, pursuant to the Commission's NY-Sun Initiative Order,[18] plans a study to assess the benefits and costs of net metering policy.[19] We agree that

[18] Case 03-E-0188 - Proceeding on Motion of the Commission Regarding a Retail Renewable Portfolio Standard. *Order Authorizing Funding and Implementation of the Solar Photovoltaic MW Block Programs*, page 24 (Issued April 24, 2014).

New York should undertake a thorough analysis of the benefits and costs of net metering, after consulting with stakeholders on the choice of study methodology.

Such an analysis should account for the lifetime benefits of distributed generation, be limited to the costs of energy exported from customer sited generation and account for all system and societal benefits.

We are convinced that such a study would show that the benefits exceed the costs and that cost shifting is absent or insignificant. [20] Several recent studies in other states show that there is little or no cost shifting between customers due to net metering.

- A study released in July 2014 assessed the impact of net metering under a variety of benefit-cost tests in Nevada. It found that when ratepayer incentives are low and in absence of an RPS multiplier, "non-participants are very nearly neutral and will experience neither a large benefit nor a cost due to new NEM installations" in 2016. "We estimate a NPV benefit of 2004-2016 NEM systems to non-participant ratepayers of $36 million during the systems' lifetimes."[21] The benefit is bigger when avoided distribution costs are accounted for in the analysis.

- A study prepared by the Vermont Public Service Department Staff in January 2013 concluded that net-metered systems do not impose a significant net cost to ratepayers who are not net metering participants.[22]

- An October 2013 study of the impact of both wholesale and behind-the-meter solar generation concluded that the benefits of solar generation in North Carolina equal or exceed the ratepayer costs of solar resources, such that new solar resources will provide economic benefits for electric ratepayers in the state.

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[19] IREC has published a standardized methodology for solar DG valuation, which explains the rationales for the range of benefits that should be taken into account, including environmental and other societal benefits. The Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation (Oct. 2013); www.irecusa.org/wp-content/uploads/2013/10/IREC_Rabago_Regulators-Guidebook-to-Assessing-Benefits-and-Costs-of-DSG.pdf.

[20] The NYSERDA's 2012 *NY Solar Study* is not a sufficient basis to conclude that net metering results in cost shifting. Costs of distributed solar have come down significantly since the 2011 data used in the study. Moreover, that study did not look at avoided carbon control costs, fuel diversity benefits, or local reliability benefits. It did not focus specifically on behind-the-meter generation. The Study assumed federal tax credits expire, and that no new systems would be added after 2025. New York State Energy Research & Development Authority, *New York Solar Study,* EA-2012-solarstudy-es*,* January 2012.

[21] Energy & Environmental Economics, *Nevada Net Metering Impact Evaluation,* Prepared for the State of Nevada Public Utilities Commission, July 2014, page 7, http://pucweb1.state.nv.us/PDF/AxImages/DOCKETS_2010_THRU_PRESENT/2013-7/39428.pdf.

[22] Vermont Public Service Department, *Evaluation of Net Metering in Vermont Conducted Pursuant to Act 125 of 2012,* January 2013, page 31, available at http://publicservice.vermont.gov/sites/psd/files/Topics/Renewable_Energy/Net_Metering/Act%20125%20Study%20020130115%20Final.pdf.

> "The costs of net-metered solar DG for non-participating residential customers are at the low end of the range of benefits, while the benefits of solar DG exceed the costs in the commercial market where marginal retail rates are lower."[23]

Other studies, focused on net metering in California and Arizona, reach similar conclusions.[24]

The findings of these studies are sensitive to a variety of factors present in each state, and may differ from those present in NY. We offer these examples for the proposition that non-participant impacts of net metering are often positive. Attachments A and B to these comments contain a list of benefits that net metered systems provide to the electric system and list of relevant studies on the benefits and costs of net metering policy.

Retention of net metering policy is fully consistent with the Commission's vision for the electric utility industry in NY. Net metering is a proven way to enable customers to better manage their electric power costs, has expanded clean renewable on-site generation in ways that lower system peaks, reduced reliance on fossil fuel generation and reduced need for central generation, transmission and distribution infrastructure.

Finally, we note that the Staff Paper poses a question, which suggests that the value of grid service to consumers with DER is somehow different from the value to consumers without DER and that rates should be adjusted based on that factor.[25] We strongly reject this concept. Any new regulatory structure must be designed to protect the fundamental right of customers to manage their own electricity use. Historically, customers have had the right to use as much or as little energy as they want, provided that the activities of the customer do not compromise the safety and reliability of the utility grid.[26] We see no reason to deviate from this perspective. Customers should not be treated differently on the basis of using on-site generation, unless there

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[23] Thomas Beach, Patrick McGuire, Crossborder Energy, *The Benefits and Costs of Solar Generation for Electric Ratepayers in North Carolina,* October 18, 2013. The Study was prepared at the request of the North Carolina Sustainable Energy Society and was submitted the North Carolina Utility Commission on April 25th, 2014 as Exhibit 2 to testimony by Mr. Beach in a pending case on avoided cost methodology, NCUC Docket No. E-100, Sub 140. http://starw1.ncuc.net/NCUC/portal/ncuc/page/docket-docs/PSC/DocketDetails.aspx.

[24] See also, "Evaluating the Benefits and Costs of Net Energy Metering in California," January 2013, Crossborder Energy. Available at http://votesolar.org/wpcontent/uploads/2013/07/Crossborder-Energy-CA-Net-Metering-Cost-Benefit-Jan-2013-final.pdf. (Crossborder Energy, California Net Energy Metering Study, January 2013); "The Benefits and Costs of Solar Distributed Generation for Arizona Public Service," Crossborder Energy (May 8, 2013). Available at http://www.seia.org/research-resources/benefits-costs-solar-distributed-generation-arizona-public-service. Using a Ratepayer Impact (RIM) test the study found benefits also exceed the costs in both the residential and commercial markets considered individually, and that these benefits amount to $34 million per year for APS's ratepayers.

[25] Staff Paper at 65.

[26] See 18 CFR § 292.303 (implementing the Public Utility Regulatory Policies Act of 1978 (PURPA), which established a customer's right to self-generate).

is a clear cost-of-service basis. If the Commission has not identified how cost of service differs between net metered and other customers, then there is no legal basis for the Commission to discriminate between the two types of customers. See Comments of SolarCity in this Case, filed July 18, 2014, at pages 13-14 and 20.

V. Transition for Clean Energy Programs

The June 4th Ruling appropriately asks how to ensure that the transition from current renewable and energy efficiency programs does not result in backsliding on the State's environmental goals. See discussion above, at page 4-5 on this topic.

VI. Enhanced Services

We have been asked to discuss the regulatory issues related to the potential for enhanced services to create revenues for regulated utilities and the relationship between enhanced services offered by a regulated utility and the monopoly function of the utility.

Wherever possible, services should be provided on a competitive basis, with the DSPP limited to a market facilitation role. We recognize, however, that during a transition to a new utility structure, the DSPP or distribution utilities may need to provide some services that are not yet available on a competitive basis.

In this circumstance, the DSPP should research the barriers to competitive services and launch pilots to help jumpstart private sector services. During the transition, the utility could provide a default service, where no competitive services are available. This could be done through a bidding structure where the utility identifies a need or a demand for services, invites non-utility companies to participate, and then offers a default service if competitive services do not arise or if those that do are far out-of-line with the speed or cost by which the utility can offer the service. The pricing of default service from a utility may require a mix of mechanisms (e.g. cost allocations, price floors, price caps, earnings sharing) to ensure that utility services do not interfere with competitive markets, nor result in excessive utility rents.

TRACK II – REGULATORY CHANGES AND RATEMAKING ISSUES

Introduction and Summary

Changes to current regulatory, tariff, and market design in New York are needed to better align utility interests with the Commission's energy policy objectives. TASC suggests that the Commission's Track II inquiry be guided by the following principles.

Ensure Open Access To The Grid At Reasonable And Predictable Prices And Timeframes

Ensuring access to innovative energy products and services is in the public interest. Such access exerts competitive pressure that ensures utility investments to keep pace with the changing world, and reduces the risk of over-investment relative to the consumers' need for regulated utility service. Customers now have the option to invest in Distributed Renewable Generation (DG) as an alternative to utility-provided energy. Net metering, interconnection rules and other policies give customers access to the grid in ways that allow on-site renewable generation to productively interact with the electric system. It is vital that the Commission sustains and expands this form of customer choice and protects customer rights to manage their own power needs via on-site renewable generation, demand response and efficiency. See further discussion of this point at pages 11-12 above and at 17-18 below.

Treat Small DG As A Load Modification in Relation to Integration and Grid Upgrade Costs

Small DG systems (residential in particular) designed to serve on-site load should be considered primarily a form of load modification, not generation. Traditionally, all customers pay for distribution costs incurred to serve load, while owners of interconnected generation pay the cost of upgrades needed to interconnect new capacity. Residential PV-sited systems are more like load than generation. Upgrades to the distribution system are likely to benefit all users of the distribution system. It would be wrong to assign the costs to a single customer when benefits accrue to all or are spread across many customers.

Develop Tariffs Or Take Advantage Of Existing Markets To Compensate DERs For Benefits Provided To The Grid, Including Ancillary Services

Any new DSPP market structure should be designed to unlock the environmental and system benefits that DER technologies provide, including ancillary services, fuel price hedging, avoided energy, capacity, T&D costs, environmental compliance costs, and societal benefits. DERs should be compensated through utility tariffs or contracts based on existing market prices

where they exist or as determined by the Commission where they do not. These mechanisms should complement, rather than substitute, compensation that DER customers receive through avoidance of retail charges and net metering. To achieve this, work is need in the following areas:

- Help NYISO to develop rules for distributed generation to participate in the Day Ahead Demand Response Program (DADRP).

- Work with the New York State Department of Environmental Conservation (NYSDEC) to count carbon emission reductions from behind-the-meter PV systems in the development of a state implementation plan under §111(d) of the Clean Air Act and reward owners of these systems for the compliance value.

- Quantify reduction in line losses due to behind-the-meter systems and set customer incentives to reflect cost savings.

- Price and compensate behind-the-meter systems for voltage/var support supplied either indirectly or directly through the use of advanced inverters and reactive power controls.

- Develop markets that allow distributed generation and storage to supply ancillary services to the NYISO.

- Develop systems, customer incentives and market mechanisms to encourage customer investments in renewable DG that improve grid resiliency, maintain service during outages or power quality events and support restoration processes.

Eliminate Standby Charges For PV Systems Under 2 MW

The current exemption from standby charges for renewable distributed generation expires on May 31, 2015.[27] The Commission should eliminate standby charges altogether for distributed renewable generation.

Avoid Rate Designs That Discourage Customers From Investing In Energy Efficiency And On-Site Renewable Energy Generation, Including Shifts From Volumetric To Fixed Charges

Rate designs that rely heavily on fixed charges and demand charges offer a weak financial motive for customers to reduce electric consumption, fail to reduce peak demand and discourage economically efficient decision-making. Fixed and demand charges contradict

[27] Proceeding on Motion of the Commission as to Continuation of Standby Rate Exemptions For Beneficial Distributed Generation. *Order Clarifying Prior Order,* Case 09-E-0109 – Issued July 20, 2090. Available at: http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId={B47C9066-94A3-4F67-9DAD-29F74017C081}.

customer choice and empowerment, and penalize energy-conscious customers who have neither a short- nor long-term ability to respond to fixed and demand charges. See Comments of SolarCity in this Case, filed July 18, 2014, at pages 16 and 18.

Time-of-use rates are a more effective means to encourage customers to reduce peak use. The more closely a customer's bill is calibrated to the customer's actual usage of electricity, the more control the customer ultimately has over his/her total monthly bill -- and the greater motivation the customer will have to modify electricity consumption.

If a cost of service study did suggest that low use customers do not appropriately contribute to utility fixed costs, the Commission could consider establishing minimum bills to address that problem. This would be much preferable to a shift from variable to fixed charges.

Retain A Decoupling Mechanism

Regardless of how future utility costs are treated, for the foreseeable future, utilities will continue to recover fixed legacy costs of the existing system via volumetric charges. The existing decoupling system is effective in achieving utility neutrality relative to changes in sales due to energy efficiency and customer-owned generation.[28] Going forward, this decoupling should be used in combination with performance-based incentives to give utilities a financial stake in lowering peak demand via energy efficiency and enabling customers to meet their power needs through behind-the-meter generation. We hope that the Commission will specifically reaffirm support for the decoupling mechanism as part of this proceeding.

The Commission Should Establish Positive, Symmetrical Performance Incentives For Distribution Utilities' Success In Expanding Customer Choice And Increasing DER

TASC recommends that the Commission institute a shift in utility investment away from central-station and long distance power transmission, toward lower-cost distributed energy models. This has potential to save consumers billions dollars that would be spent on infrastructure that could eventually become an obsolete, stranded investment.

[28] NY Public Service Commission, *Order Requiring Proposals for Revenue Decoupling Mechanisms*, Issued and Effective April 20, 2007, Case 06-G-0746 Proceeding on Motion of the Commission to Investigate Potential Electric Delivery Rate Disincentives Against the Promotion of Energy Efficiency, Renewable Technologies and Distributed Generation, http://www3.dps.ny.gov/W/PSCWeb.nsf/All/A0227F4885E1769485257687006F38C2?OpenDocument.

Access To Billing Data

Customers and their third-party energy service providers should have easier access to customer billing and meter data. TASC agrees with the Staff Paper that the Commission has made progress in this area, but that, "Further work is required to define the conditions under which customer-specific energy usage data can be shared with non-utility parties."[29]

Consumer Incentives

The Commission should retain the current consumer incentive structure to advance solar energy investment. NYSERDA has recently established stability and predictability in its programs. Changes now risk upsetting the Governor's goals for solar under NY-Sun Initiative. NYSERDA should also expand customer incentives to help commercialize PV/storage combinations. Some mechanism is also needed to support development of microgrids and on-site generation that can help customers retain electric service during outages and emergencies and assist in service restoration after emergencies.

In the discussion below we list the roman-numeral headings (bolded) and numbered questions (underlined) from Track II questions posed by the ALJs and Staff. Since we do not respond to all questions posed, some numbers and roman numerals are skipped.

I. OUTCOMES-BASED RATEMAKING

1) Incentives and disincentives in current ratemaking

The Commission should take this opportunity to clarify the current approach to distribution costs, in light of the need to accommodate higher levels of customer-sited generation. Utilities should continue to treat small behind-the-meter PV as a load modifier. Costs of upgrades to distribution facilities to accommodate increases in customer-sited generation should be recovered in the same way as other distribution operation and maintenance costs – not from customers seeking to install on-site generation.[30]

[29] Page 41 of Staff Paper.

[30] Several states operate their net metering programs in this way. Florida Administrative Code, 25-6.065 Interconnection and Net Metering of Customer-Owned Renewable Generation, subsections 8(b), 4(e). Available at: http://www.fpl.com/residential/savings/pdf/interconnection_and_net_metering_rule.pdf.

Customers that do not have on-site generation benefit from distribution upgrades to accommodate on-site generation. Other beneficiaries include customers that may want to install on-site generation in the future on the same distribution segment. Assigning the cost of an upgrade to an individual customer is a strong disincentive to on-site generation investment.

Modifications to the distribution system to accommodate higher levels of customer-sited generation should take place through distribution planning.[31] Utilities should proactively plan modifications to the distribution system to accommodate customer-sited generation systems and include the cost of doing so in distribution rates paid by the relevant rate class.

Experience shows that where customers pay the cost of distribution upgrades to accommodate their NEM systems, the process can grind to a halt if the utility has to study whether upgrades are needed, determine the cost of the upgrades and obtain a commitment from the customer before he/she can install a system. One upgrade requirement can stop interconnections and effectively close circuits to DG. Assigning the costs of upgrades to the customer makes the interconnection process reactive, and impedes the ability of planning to nimbly meet needs like it does currently for increases in load. Such a system inappropriately places customers in competition for access to the distribution system. By treating customer-sided generation as load, the utility can move quickly and incur costs to anticipate increases in both load and customer-sited generation, with a well-worn path to recover costs.

Under this approach the distribution utility might use a combination of: (a) energy efficiency and load shifting, (b) DER-based ancillary services, and (c) communications equipment as lower cost solutions to accommodate higher penetrations of DG resources. An integrated planning process that looks at all options is likely to result in lower cost than traditional infrastructure upgrades and utility-owned equipment.

The DSPP would also be responsible for market facilitation, i.e., valuation, identification of needed products/services and pricing of access to the grid, based on cost-benefit studies, cost-of-service studies and system planning studies.

2) New outcomes/metrics

a. What new targeted performance incentive approaches should be considered?

[31] See Integrated Distribution Planning (IDP) Concept Paper, A Proactive Approach for Accommodating High Penetrations of Distributed Generation (May 2013), available at www.irecusa.org/wp-content/uploads/2013/05/Integrated-Distribution-Planning-May-2013.pdf.

TASC recommends adoption of Performance Incentives for utility success in achieving:

- A heavier reliance on DER to reduce peak demand, ensure system reliability, reduce bulk power purchases and lower electricity costs.
- Success in lowering CO_2 emissions from the NY electric sector.[32]
- Improved system reliability and resilience.
- Increased customer-sited generation.
- Increased in customer-sited generation combined with storage.
- Streamlined interconnection for behind-the-meter DER.
- Effective use of DER as a hedge against generation fuel price risk.

d. How should a distribution system efficiency incentive be designed? What performance measures and targets need to be developed for a distribution system efficiency incentive?

Shareholder incentives should be developed to encourage action to improve distribution efficiency. Utilities should be rewarded for the following targets or performance measures:

- Reduction in purchases from bulk power system due to distribution efficiency improvements and facilitation of DER.
- Success in deferring transmission and distribution system costs via non-wires alternatives that are less costly than traditional wires solutions.
- Completion of distribution system monitoring equipment and communications – as needed to allow utilities to target DG, DR, and EE to resolve transmission and distribution overloads, as non-wires alternatives.
- Success in distribution planning that grows revenues from ancillary services provided to bulk power system, cooperatively with customer-owned DER.
- Secure the technology and systems to identify changes needed in distribution capacity to accommodate growth in demand, and growth in behind-the-meter generation.

[32] New York relies too heavily on imported fossil fuel for power generation, resulting in an export of wealth and jobs from the state. Reductions in line losses, facilitation of behind-the-meter DER, load reductions due to energy efficiency and demand response are all important ways to reduce fossil use and carbon emissions. New tools are available from USEPA to estimate the CO_2 reduction due to specific control measures. In combination with carbon prices that emerge from the Regional Greenhouse Gas Initiative, each utility can calculate the value of its contribution toward the CO_2 emission reduction goals. Utilities could receive an incentive payment representing a share of compliance cost savings.

4) Accommodating bridge investments. Bridge investments are long-term projects that may require several years or levels to achieve.

a. Should the Commission incent utilities to build/acquire bridge investments?

Yes. Distribution utilities need to invest in a wide range of system monitoring, communications, and control equipment to reduce bulk power purchases, reduce peak demand, enable DER and facilitate customer access to a wider range of services and options to control their power consumption. The Commission should set goals and milestones for achieving this transition and reward success, through shareholder incentives or return-on-equity invested. See Comments of SolarCity in this Case, filed July 18, 2014, at page 13.

7) Utility as DSPP and as DER-owner: neutralizing incentives

a. Can ratemaking or structural mechanisms be established to remove the utility bias in favor of DER investments owned by the utility or its affiliates?

No. As noted above, TASC does not believe utilities should be allowed to own behind-the meter-generation. The potential for unfair subsidies, market inefficiencies and loss of cost controls counsel against such an approach. Ownership by a structurally separated "unregulated" affiliates can be permitted, though the PSC must ensure the affiliate safeguards are effective and are adhered to. The Commission may require affiliates wishing to own behind-the-meter generation to apply to the Commission for permission to do so.

8) Removing bias toward increasing capital expenditures

a. What ratemaking mechanisms or incentives would encourage the most efficient mix of capital expenditures and operational expenses?

Performance based incentives should be sufficient to overcome the bias toward capital investment. Should utilities perform the role of a DSPP, the investments needed to carry out the new role will provide ample opportunity for adequate revenues through existing rate of return earnings structure. The key is to incentivize the right kinds of investment. Utilities could continue to earn a rate of return on existing rate base (to recover embedded costs and return on that investment) but going forward only capital expenditures consistent with the new DSPP role should be eligible for rate of return earnings, such as investment that empowers customers to exercise the choices to manage their own power consumption, improves reliability, lowers overall system costs, lowers peak demand, and reduces carbon intensity of the electric system.

III. RATE DESIGN

1) How do the customer incentives and disincentives under current rate design affect DER participation?

Currently NY utilities make very little use of time-of-use (TOU) rates to encourage reduction of peak power consumption and provide information to residential customers needed to control power costs. The Commission should consider experimenting with TOU rates, closely coordinated with efforts to facilitate behind-the-meter PV, storage and efficiency measures. The absence of TOU signals currently discourages customers from adoption of these measures.

Voluntary TOU tariffs encourage consumers to adjust their electric consumption based on price signals. TOU rates abide by cost-causation principles by providing higher prices during peak hours in order to reflect the higher marginal costs during those times. TOU pricing provides customers with signals that more accurately reflect system capacity costs. Higher prices create an incentive for customers to shift load and improve energy efficiency in their homes or facilities. Thus, TOU rates reduce both coincident and non-coincident peak demand, while encouraging conservation and energy efficiency. In addition, TOU rates assist with renewables integration by signaling customers when it is optimal to consume power from or to place power onto the grid.

2) Tariffs for DSPP products

a. How should non-monetized benefits and costs (e.g., carbon) be accounted for in rates, if at all?

Prices for DSPP products should reflect the value of lowering carbon intensity of NY's electric power system. Avoided carbon emission control cost is is likely to be a monetized value. Reduction in climate change impacts is non-monetized. Both should be counted.

5) New rate designs

In general, it is critical that customers have easy access to data and other relevant information that will allow them to make informed decisions. Any transition to new rate structures should be smooth and orderly, with generous use of rate options and grandfathering to minimize confusion, particularly for residential customers. It is essential to TASC, its members,

its customers and its contractors, that any rate changes take account of and fully respect the long-term investments that thousands of customers have already made in distributed renewables.

d. Should the current volumetric rate designs used to recover embedded costs be revised to move toward fixed pricing? What are the tradeoffs or unintended consequences of moving towards fixed pricing that should be considered?

No. The more closely a customer's bill is calibrated to the customer's actual usage of electricity, the more control the customer ultimately has over her total monthly bill -- and the greater motivation the customer will have to modify electricity consumption. Relative to fixed charges, volumetric rates, particularly when paired with time-of-use (TOU) rates, can reduce peak demand and provide customers with the best range of information on their energy usage.

e. To what extent should the existing revenue decoupling mechanisms (RDM) continue to be applied and what modifications would be necessary?

f. Should lost revenues due to customer bypass be fully, partially, or not included and recovered in the RDM, or some other, reconciliation process?

The current decoupling mechanism is working well and is superior to lost revenue recovery mechanism. We discourage the Commission from making a transition to a lost revenue recovery mechanism.

g. What payment structure would facilitate distribution utility ownership of DER behind customers' meters? For example, should a customer be provided with a direct payment for allowing the utility to locate the DER on its property or should the customer be allocated a portion of the ongoing DER benefit?

Utilities should not own behind-the-meter generation or storage facilities.

h. How can rates best be structured to equitably share system benefits among participating and non-participating customers (i.e. customers without DER onsite)?

Current net metering rules do this effectively in relation to onsite DER. Non-participating customers automatically share in the benefits of DER, though lower wholesale bulk power prices, reduced T&D investment and operation costs, reduced compliance cost with air

quality regulations, reduced health and environmental damages from power plant pollution, and other cost reductions.

The Commission should avoid setting rates that discriminate between customers with and without on-site generation. Fairness dictates that a very high burden exists to justify disparate treatment of customers within rate classes. It would be wrong for the Commission to move toward differential changes for customers with on-site generation without a basis for such discrimination.

7) Rates

a. How can the current standby rate design be revised to reflect the diversity of DER and the unlikelihood that all DER resources would fail at once and all during the system peak hour?

Standby rates for customers with on-site renewable generation below 2 MW should be eliminated. The Staff Paper discussion at page 62 describes the rational for imposing standby tariffs on DER as if these resources have no benefits to the system or society. There is no discussion of the many system and environmental benefits associated with zero emission generation located close to load. This discussion should be revised to be consistent with other parts of the Staff Paper that do recognize these benefits. See Comments of SolarCity in this Case, filed July 18, 2014, at page 19.

b. How can the current standby rate design be revised to reflect environmental or system values of certain types of DER?

All standby rates for distributed renewable generation should be eliminated. The solar industry is concerned that standby rate exemptions in NY are set to expire in May 2015. Early action on this by the Commission would represent a strong concrete step toward the vision described in the REV Staff Paper.

c. How would the current standby rate design need to change to be applicable to multi-customer microgrids?

It is inappropriate to impose standby charges on microgrids at this time. Microgrid development is essentially an R&D activity at this time. There is a great deal to be learned from experimentation. Standby fees would chill this experimentation.

> d. How should the prices for products and service reflect the additional system and environmental values represented by technologies that are currently eligible for net metering?

The question implicitly suggests that net metering would be eliminated in favor of some substitute form of payment. This would be a mistake. See discussion above at pages 10-12. While it is possible that some other form of payment to owners of net-metered generation would more precisely capture the additional system and environmental values provided by customer generation, the administrative costs of setting those prices and periodically revising them is not worth the effort. Net metering as it stands today adequately incentivizes customers to invest in on-site renewable generation, and benefits to the system generally exceed the costs to non-participating customers.

CONCLUSION

The members of TASC thank the Commission and Staff for this opportunity to comment on the Staff Paper and questions posed by the Administrative Law Judges. TASC plans to actively engage in future stages of this proceeding. This proceeding is nationally significant and is likely to set precedents for other states. NY is clearly a leader on issues posed.

Respectfully Submitted,

David Wooley
Keyes, Fox & Wiedman LLP
436 14th Street, Suite 1305
Oakland, CA 94612
dwooley@kfwlaw.com
510-314-8207
Counsel for The Alliance for Solar Choice

July 18, 2014

Attachments

A. The Alliance for Solar Choice, Direct Testimony of Nathanael Miksis, Utah Public Service Commission, Docket No. 13-035-184, Exhibit C, *Relevant Values of Solar Distributed Generation and Recommended Definitions and Methodologies.*

B. The Alliance for Solar Choice, Direct Testimony of Nathanael Miksis Docket, Utah Public Service Commission, No. 13-035-184, Exhibit B *List of relevant, previous studies that address methodological questions associated with evaluating the costs and benefits of renewable distributed generation ("DG") or state net metering programs*.

Attachment A.

The Alliance for Solar Choice, Direct Testimony of Nathanael Miksis, Utah Public Service Commission, Docket No. 13-035-184, Exhibit C, Relevant Values of Solar Distributed Generation and Recommended Definitions and Methodologies.

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EXHIBIT C

Relevant Values of Solar Distributed Generation and Recommended Definitions and Methodologies

The list below groups costs and benefits based on how most studies treat each. Grid support/ancillary services has its own category since these distributed generation ("DG") attributes can either be a positive or negative value. In addition, the list provides a definition for each element and indicates the best process or methodology to assign a monetary value to each stated value. Rather than include detailed explanations of these processes and methodologies, we provide, where appropriate, references to sources with more complete explanations.

Ancillary Services and Grid Support

Value Category	**Subcategories**	**Definition**	**Methodology / Process**
Ancillary Services and Grid Support	-Ancillary Services -Reactive Supply & Voltage Control -Frequency Regulation -Energy imbalance -Operating Reserves -Scheduling and/or Forecasting -DG System Integration Costs -Technology Synergies	Ancillary services and grid support enable the reliable operation of a grid hosting customer-sited, distributed solar. The value of ancillary services and grid support can be either a positive or negative value when compared with the costs that would otherwise be incurred without distributed solar. Such services include reactive supply, voltage control, frequency regulation, energy imbalance, operating reserves and scheduling/forecasting. TASC believes that the value of "technology synergies", such as advanced inverter technology, or the combination of rooftop solar and energy storage, would also be accounted for here.	Model ancillary services benefit and costs. Regulator's Guidebook at 29-30 and 39-40.[1] Can be a benefit if the utility's ancillary service needs are a function of load. See E3 and Crossborder studies of NEM in California, included in Exhibit AS-1. Easier to quantify in markets where ISOs operate visible ancillary service markets.

[1] Keyes, Jason B., Rábago, Karl R., Regulator's Guidebook: Calculating the Benefits and Costs of Distributed Solar Generation, Interstate Renewable Energy Council, Inc. and Rábago Energy, LLC, October 2013. Available at http://www.irecusa.org/wp-content/uploads/2013/10/IREC_Rabago_Regulators-Guidebook-to-Assessing-Benefits-and-Costs-of-DSG.pdf

Grid-Related Values

Value Category	**Subcategories**	**Definition**	**Methodology / Process**
Avoided Energy Costs	-Avoided Fuel / Purchased Power Costs -Avoided Variable O&M	The cost of energy that would have otherwise been generated to meet customer needs.	Determine future market price of energy over the lifetime of the distributed solar facility. Regulator's Guidebook at 21-22.
Avoided Energy Losses	-Avoided Line Losses	The value of the additional energy generated by central plants that would otherwise be lost due to inherent inefficiencies in delivering energy to the customer via the transmission and distribution system.	Compare total line losses without distributed solar to total line losses with distributed solar. Regulator's Guidebook at 23-24.

Value Category	Subcategories	Definition	Methodology / Process
Avoided Capacity Costs for Generation	-Avoided Power Plant Capital Costs – Customer's Capital Contribution -Avoided Fixed O&M -Avoided Power Plant Decommissioning Costs -Distributed Energy Capacity Value -Avoided Generation Capacity (new generation $) -PV System Orientation	The cost and amount of generation capacity that can be deferred or avoided due to distributed solar. The orientation of a PV system will affect the amount of capacity that distributed solar provides. In turn, the amount of capacity distributed solar provides will directly impact the avoided need for new generation capacity. The value of the avoided need for new generation capacity includes avoided capital costs, avoided fixed O&M, and avoided decommissioning costs.	Determine the capacity value of distributed solar using the Effective Load Carrying Capacity methodology. Regulator's Guidebook at 24-26. Control area operators may have comparable procedures for setting the resource adequacy capacity of distributed solar resources. Determine the capital and O&M costs of the marginal generator that is avoided. Regulator's Guidebook at 24-26.
Avoided and Deferred Capacity Costs for T&D	-Avoided / Delayed Transmission System Investment -Avoided / Delayed Distribution System Investment	The value of the avoided or deferred T&D infrastructure investments due to distributed solar.	Use location-specific data to conduct individualized assessment of distributed solar system value. Regulator's Guidebook at 26-29. Important to consider long-term avoided costs, beyond the utility's near-term T&D plans.

Value Category	Subcategories	Definition	Methodology / Process
Avoided Renewables Costs	-Avoided Renewable Energy and Energy Efficiency Portfolio Standard (REPS) Costs	When customer-sited, distributed solar generation reduces onsite load, a utility does not have to procure as much renewable generation capacity to meet renewable portfolio standards. This reduction in procurement obligations results in cost savings. Customer-owned distributed solar satisfies customer demand to be served with a penetration of renewable generation in excess of the utility's RES requirements, and thus can avoid the costs which the utility would incur to meet such customer preferences through green pricing programs or other initiatives.	Quantify reduction in REPS compliance costs and calculate against market price for the relative compliance instrument. Regulator's Guidebook at 32-35. Customer demand for a higher-than-REPS share of renewables can be valued based on the cost of utility "green pricing" programs which serve the same customer demand. The U.S. Department of Energy maintains a data base of such programs.[2]
Fuel Price Hedge	-Avoided Fuel Hedging Costs	The avoided costs a utility would otherwise incur to guarantee energy fuel costs are fixed.	Compare the cost of a 30-year investment with substantial price uncertainty to one with a fixed price. Regulator's Guidebook at 30.

[2] EERE, U.S. DOE, Green Pricing: Utility Programs by State, http://apps3.eere.energy.gov/greenpower/markets/pricing.shtml?page=1 .

Value Category	Subcategories	Definition	Methodology / Process
Energy Market Impacts	-Avoided Market Price Mitigation (reduction of wholesale market clearing prices for natural gas and electricity)	Distributed solar reduces the demand for fuel to power central station generators and for wholesale power in the wholesale electricity market, reducing wholesale market clearing prices for natural gas and electricity. Reduced demands in these markets lowers prices across the entire market served, providing benefits for the general body of consumers who use these markets.	Estimate the difference between current price projections and hypothetical price projections without the reduction in demand caused by distributed solar. Regulator's Guidebook at 31. Easiest to calculate for regions with deregulated markets and visible market prices. For example, this benefit is regularly included in avoided cost calculations in the U.S. Northeast.[3] These benefits in the natural gas market also have been quantified.[4]

Environmental Values

[3] The market price mitigation benefit of demand-side resources, also called the demand reduction induced price effect (DRIPE), has been estimated at 19-25% of combined energy and capacity prices. Synapse Energy Economics, "Avoided Energy Supply Costs in New England: 2011 Report" (August 11, 2011), at Exhibit 1-1. Available at http://www.synapse-energy.com/Downloads/SynapseReport.2011-07.AESC.AESC-Study-2011.11-014.pdf .

[4] A Lawrence Berkeley National Lab study estimated that the consumer gas bill savings associated with increased amounts of renewable energy and energy efficiency, expressed in terms of $ per MWh of renewable energy, range from $7.50 to $20 per MWh. Wiser, Ryan; Bolinger, Mark; and St. Clair, Matt, "Easing the Natural Gas Crisis: Reducing Natural Gas Prices through Increased Deployment of Renewable Energy and Energy Efficiency" (January 2005), at ix, http://eetd.lbl.gov/sites/all/files/publications/report-lbnl-56756.pdf.

Value Categories	**Subcategories**	**Definition**	**Methodology / Process**
Environmental Benefits	-Water Consumption -Cost of Environmental Compliance	The saving realized from reduced air emission control or allowance costs, including those related to carbon, criteria air pollutants and reduced water use.	To the extent not reflected in the cost of avoided energy, quantify the reduction in carbon, criteria air pollutants, and water use, and calculate using the market price for the appropriate compliance instrument (such as the price of carbon offsets). Regulator's Guidebook at 32-35.

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Societal Values

Value Categories	**Subcategories**	**Definition**	**Methodology / Process**
Health Benefits	-Health Effects (Benefits)	The reduction in societal costs from health risks, including reduced morbidity and mortality, related to air pollution from fossil-fuel production, transportation, and generation.	Quantify reduction in carbon or criteria air pollutants and calculate against estimates of the cost of impacts from such pollution in public health studies. Regulator's Guidebook at 32-35.
Security and Resiliency of the Electric Grid	-Grid Security -Grid / Service Reliability	The benefits to society (*i.e.*, the economy) realized from: (1) The reduction in outages from reduced congestion along the T&D network, (2) The minimization of large-scale outages resulting from a more diverse and dispersed electricity supply, and (3) Back-up power provided by customer-sited DG.	Compare assumed risk of outages and blackouts, assumed cost to strengthen grid to avoid that risk, and assumed ability of DG to strengthen the grid. Regulator's Guidebook at 31. This benefit has been calculated for DG in several Mid-Atlantic states.[5]

[5] Hoff, Norris, and Perez, *The Value of Distributed Solar Electric Generation to New Jersey and Pennsylvania* (November 2012), at Table ES-2, available at http://mseia.net/site/wp-content/uploads/2012/05/MSEIA-Final-Benefits-of-Solar-Report-2012-11-01.pdf.

Value Categories	Subcategories	Definition	Methodology / Process
Avoided Environmental and Safety Costs	-Non-Compliance Environmental Effects	The reduction in costs related to: (1) Fewer land use impacts because customer-sited, distributed solar is installed in the already-built environment; (2) The savings realized from avoided accidents, pollution and economic loss associated with the extraction, transportation, distribution, and processing of fossil fuels; and (3) The reduced compliance costs related to a decrease in the extraction, transportation, distribution and proceeding of fossil fuels.	Difficult to calculate, although the cost of specific accidents can be very large.
Effects on Economic Activity and Employment	-Economic Development and Jobs	The value from the increase in jobs and local economic development related to customer-sited, distributed solar and the resulting increase in welfare and economic productivity of children and working adults from the above health benefits.	Calculate tax enhancement value from derived from DG industry in the state. Regulator's Guidebook at 35.
Visibility Benefits		The increased recreation value and economic activity associated with improved visibility due to emissions reductions from power generation.	Assess using environmental impact analysis methodology.[6]

[6] *See, e.g.,* "The Benefits and Costs of the Clean Air Act from 1990 to 2020", Office of Air and Radiation, U.S. Environmental Protection Agency, p. 18 (March 2011) (available at http://www.epa.gov/oar/sect812/feb11/summaryreport.pdf).

Attachment B.

The Alliance for Solar Choice, Direct Testimony of Nathanael Miksis Docket, Utah Public Service Commission, No. 13-035-184, Exhibit B List of relevant, previous studies that address methodological questions associated with evaluating the costs and benefits of renewable distributed generation ("DG") or state net metering programs.

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EXHIBIT B

1. *Net Energy Metering Cost Effectiveness Evaluation*, E3 Consulting (March 2010). Available at http://www.cpuc.ca.gov/NR/rdonlyres/0F42385A-FDBE-4B76-9AB3-E6AD522DB862/0/nem_combined.pdf. (California PUC / E3 2009-2010 Net Energy Metering Study).
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6. "New York Solar Study: An Analysis of the Benefits and Costs of Increasing Generation from Photovoltaic Devices in New York," New York State Energy Research and Development Authority (January 2012). Available at http://www.nyserda.ny.gov/Publications/Program-Planning-Status-and-Evaluation-Reports/Solar-Study.aspx.
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http://communitypowernetwork.com/sites/default/files/MSEIA-Final-Benefits-of-Solar-Report-2012-11-01.pdf.[1]

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10. "The Benefits and Costs of Solar Distributed Generation for Arizona Public Service," Crossborder Energy (May 8, 2013). Available at http://www.seia.org/sites/default/files/resources/AZ-Distributed-Generation.pdf. (Crossborder Energy, Cost-Benefit Study of Solar DG in Arizona Public Service (APS) territory, May 2013).
11. "2013 Updated Solar PV Value Report, Arizona Public Service," by SAIC Energy, Environment and Infrastructure, LLC. Available at http://www.solarfuturearizona.com/2013SolarValueStudy.pdf. (SAIC, APS Net Energy Metering Study, May 2013).
12. "Direct Testimony of R. Thomas Beach" for the Idaho Conservation League, May 10, 2013. Submitted in Case No. IPC-E-12-27. Available at http://www.puc.idaho.gov/fileroom/cases/elec/IPC/IPCE1227/intervenor//IDAHO%20CONSERVATION%20LEAGUE/20130510BEACH%20DIRECT.PDF. (Crossborder Energy, Idaho Power testimony, May 2013).
13. *Benefits and Costs of Solar Generation for Ratepayers in North Carolina*, Crossborder Energy (October 18, 2013). Available at http://energync.org/assets/files/Benefits%20and%20Costs%20of%20Solar%20Generation%20for%20Ratepayers%20in%20North%20Carolina%282%29.pdf.
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