American Council for an Energy-Efficient Economy

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September 2, 2016

Commissioner Travis Kavulla, President
National Association of Regulatory Utility Commissioners
1101 Vermont Avenue NW #200
Washington, DC 20005

Re: Comments on NARUC Distributed Energy Resources Compensation Manual

Dear President Kavulla:

The American Council for an Energy-Efficient Economy (ACEEE) welcomes the opportunity to provide written comments on the draft NARUC Manual on Distributed Energy Resources Compensation. ACEEE appreciates the subcommittee's efforts in preparing this draft manual to address significant challenges and transitions facing the electric industry today. The proliferation of distributed energy resources presents electric utilities with unique challenges, but also many significant benefits.

The focus of our comments is on the inclusion of energy efficiency as a distributed resource and the implications of various types of rate design on customer energy efficiency. Our research demonstrates energy efficiency programs are generally the least cost resource available to electric utilities nationally.[1] Further research also demonstrates the substantial value of energy efficiency as a targeted distributed resource to reduce system costs and defer the need to invest in costly distribution and transmission infrastructure.[2] Energy efficiency as a distributed energy resource can increase community resilience, reduce environmental damages from traditional fossil fuel generation, and lower system costs. Well designed electric rates can be a useful policy tool to encourage energy efficeicny. However, poorly designed rates such as high fixed charges can discourage customer investments in energy efficeicny and increase overall consumption leading to unneeded costly utility investments.

Our comments focus on these primary recommendations:

1. Energy efficiency is a proven, reliable resource and should be recognized as a DER in the final version of this manual.
2. The final version of the manual should clearly reject the premise that utility fixed costs should be recovered in fixed charges.
3. The final version of the manual should focus on the best practices discussed below to address the challenges associated with standby rates for customers utilizing combined heat and power (CHP).
4. The final version of the manual should promote full revenue decoupling as a policy that balances the interests of utilities and customers by ensuring cost recovery while still promoting the investment of cost effective DERs.

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[1] Molina, M. 2014. *The Best Value for America's Energy Dollar: A National Review of the Cost of Utility Energy Efficiency Programs.* American Council for an Energy-Efficient Economy. aceee.org/research-report/u1402.

[2] Neme, C. and J. Grevatt. 2016. *Energy Efficiency as a T&D Resource: Lessons from Recent U.S. Efforts to Use Geographically Targeted Efficiency Programs to Defer T&D Investments.* Energy Futures Group, prepared for the Northeast Energy Efficiency Partnerships. neep.org/sites/default/files/products/EMV-Forum-Geo-Targeting_Final_2015-01-20.pdf.

5. The final version of the manual should reject increasing fixed charges as a potential compensation methodology approach for DERs. Demand charges should also be approached with caution as a solution to cost recovery concerns due to the lack of information and data on customer response and peak load reduction.
6. The final draft of the manual should include time of use rates as a potential compensation methodology alternative to demand charges or higher fixed charges.
7. The rate design subcommittee should remain a permanent NARUC subcommittee and continue collaborative efforts among states and with outside stakeholders to address issues in rate design.
8. Make the DER compensation manual a living document and update it periodically to reflect new information and current experience.

I. Defining Energy Efficiency as a DER

The draft manual provides a specific definition of a distributed energy resource.[3] This definition includes energy efficiency an example type of DER, but it is not addressed in the "types of DER technologies and services" section. The "types of DER technology and services" section includes detailed descriptions of several DERs including solar, wind, storage, combined heat and power (CHP), demand response, microgrids, and electric vehicles. In the following section titled "expanding the definition of resource", the draft manual expresses doubt in energy efficiency as a resource. The draft manual relies on two reasons to describe why energy efficiency is not always included in the definition of a resource. These two reasons include (1) energy efficiency is not dispatchable and (2) determining energy savings attributable to energy efficiency adds significant complexity to determining the resource value of energy efficiency. Following this discussion, the draft manual suggests that a "regulator will need to determine whether or not it is appropriate to include energy efficiency in its consideration of DER."

ACEEE strongly disagrees with the above characterization of energy efficiency. For example, several DERs including wind and solar power are not dispatchable, yet receive significant focus throughout this manual. The ability to dispatch is not a required condition of a DER under any definition of the concept. Much information is known about how energy efficiency measures affect load shapes, and this information can be fully utilized in DER planning.

ACEEE also disagrees with the perceived uncertainty regarding the measurement and value of energy efficiency as a resource. Energy efficiency is a widely recognized, cost-effective and reliable resource. The inclusion of energy efficiency as a reliable capacity resource in both PJM and NE-ISO capacity markets fully demonstrate the value of efficiency as a resource.[4,5]

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[3] *See* draft manual, page 17.

[4] *See* most recent forward capacity auction results for PJM at pjm.com/~/media/markets-ops/rpm/rpm-auction-info/2019-2020-base-residual-auction-report.ashx.

[5] *See* most recent forward capacity auction results for NE-ISO at iso-ne.com/static-assets/documents/2016/02/20160211_fca10_initialresults_final.pdf.

Many states also rely on energy efficiency as a resource to meet projected demand. Early this year the Northwest Power and Conservation Council (NWPCC) released the 7th Power Plan for the Pacific Northwest region.[6] The plan, which assumes significant economic growth in the region, expects that cost-effective energy efficiency will meet all projected load growth through 2025. Figure 2 shows the projected cumulative resource development in the 7th Power Plan.

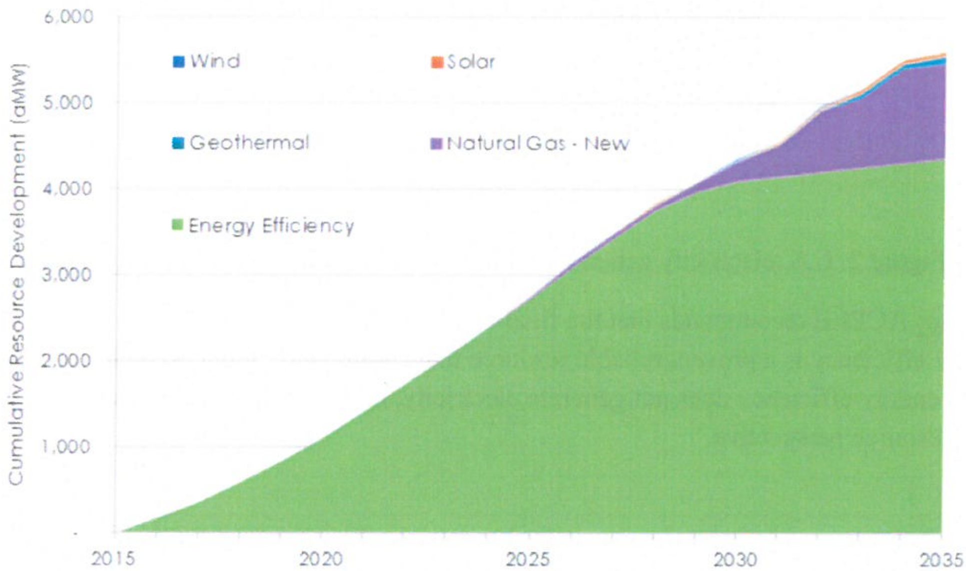

Figure 1. NWPCC 7th Power Plan cumulative resource development projection. *Source:* NWPCC 2016.

Energy efficiency is also one of the largest resources in the United States. In a recently released ACEEE report, energy efficiency is recognized as the third largest resource in the country, only behind coal and natural gas.[7][8] Figure 2 shows the comparison of resources by type in 2015.

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[6] The Northwest Power and Conservation Council conducts resource planning for four states in the Northwest: Oregon, Idaho, Montana, and Washington. More information about the NWPCC and the 7th Power Plan can be found at nwcouncil.org/energy/powerplan/7/home/.

[7] Molina, M., Kiker, P., and S. Nowak. "The Greatest Energy Story You Haven't Heard: How Investing in Energy Efficiency Changed the US Power Sector and Gave Us a Tool to Tackle Climate Change." 2016. aceee.org/sites/default/files/publications/researchreports/u1604.pdf.

[8] This includes utility-sector energy efficiency, building energy codes, and appliance and equipment efficiency standards.

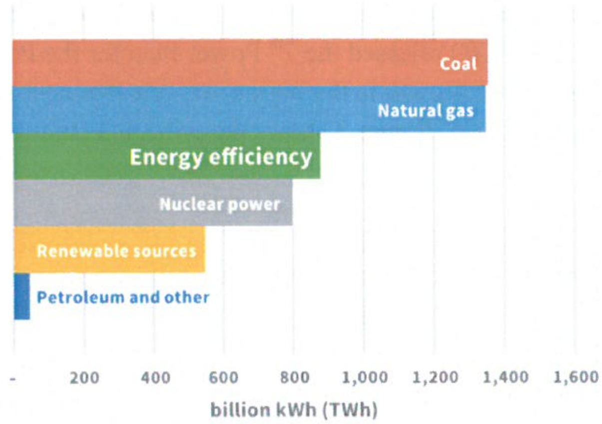

Figure 2. U.S. electricity generation and savings from energy efficiency in 2015.

Recommendation: ACEEE recommends that the final version of this manual explicitly include energy efficiency as a DER. Energy efficiency is a proven, reliable resource that significantly reduces the need for supply side resources. While energy efficiency does not generate electricity, reducing the need is essentially the same exact outcome from a resource perspective.

II. Recovery of Fixed Costs in Fixed Charges

Many utilities in recent years have requested increased customer charges under the premise that costs that could be considered utility fixed costs should be recovered in fixed charges. This logic in the context of ratemaking is flawed for several reasons. First, recovering utility costs in this way is not cost-based or rooted in cost causation. The cost to serve individual customers varies based on a number of factors. For example, urban customers cost less to serve than rural or suburban customers, and customers in multifamily buildings cost less to serve than those in single family homes. This method of cost recovery through fixed customer charges will substantially over collect costs from some users and under collect from others.

It is also important to consider the differences between short and long term fixed costs. Some costs which may be considered fixed in the short term are variable in the long term. Rate design focused on high fixed charges presents a price signal to customers that these costs are fixed in the long term and unavoidable. Some future costs, such as new generation and distribution system upgrades, are infact variable and may be avoided based on demand.

Second, recovery of costs in this manner sends customers poor3 price signals leading to inefficient levels of consumption. Customers respond to price signals. Moving cost recovery from volumetric rates to fixed charges will increase consumption over time because customers do not receive a price signal that their usage creates capacity costs for a utility.[9] This in turn will ultimately lead to unnecessary increases in utility infrastructure investment costs and higher rates for all customers.

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[9] *See* Kihm, S. 2015. "Economic Concerns About High Fixed Charge Pricing for Electric Service." americaspowerplan.com/wp-content/uploads/2014/10/Economic-analysis-of-high-fixed-charges.pdf.

Third, this type of rate design does not align with generally accepted principles of rate design, specifically the principle of efficiency in rates discouraging wasteful use of service. This criteria is one of three primary principles outlined by Professor James Bonbright in *Principles of Public Utility Rates*. In the text, Professor Bonbright recognized the importance of setting rates that avoid the wasteful use of public utility resources. While this text was published over 50 years ago, it still guides ratemaking decisions today. The need to discourage wasteful use of resources is also just as important today to help the United States address climate change and to keep energy affordable.

Recommendation: The final version of the manual should clearly reject the premise that utility fixed costs that could be should be recovered in fixed charges.

III. Combined Heat and Power and Standby Rates

ACEEE appreciates the inclusion of CHP as a DER. However, under some rate structures, CHP customers are faced with confusing and often excessive charges for supplemental, standby and back-up electricity provided by their local utility, which can create a disincentive to invest in CHP as a distributed energy resource. Utility tariff structures for these services are a key condition for the economic viability of CHP projects. Rates that recover the majority of the cost of service in fixed charges or ratcheted demand charges significantly reduce the financial viability of a CHP project. In some cases ratchets can remain in place for a year or more, which is generally viewed as detrimental to the deployment of CHP.

The appropriate level of standby rates has been the subject of debate between utilities and customers. Many of the prevailing tariff structures suffer from deficiencies and create barriers to greater CHP deployment. We recommend that the NARUC manual recognize challenges with establishing standby rates for customers that self-generate and refer to best practices for addressing these challenges. In a 2014 study, the Regulatory Assistance Project examined utility standby rates in five states, identified deficient designs, and made recommendations on how to improve rate designs that encourage the deployment of cost-effective CHP resources.[10] Additionally, a detailed review by the US DOE-sponsored Midwest Clean Energy Application Center of existing Iowa standby rates offers a clear analysis of how various rate structures impacts CHP projects, and suggests best practices.[11] We urge regulators to consider these known best practices and ensure that utility tariffs represent these principles in good standby rate design.

Finally, CHP offers known reliability and resiliency benefits, particularly when it serves critical facilities such as hospitals, water treatment plants, and government operations facilities. In many cases when the grid goes down, CHP systems have been able to stay online and meet some of the additional need created by the grid failure. We recommend these benefits be considered in rate design. The ability of CHP systems to serve demand that local utilities are expected to serve should be reflected in any rate structure for CHP systems capable of black-start and island mode. When CHP customers are fairly charged for the grid services they actually receive or offer, this will

[10] See RAP's blog post and full report. Blog: raponline.org/news/standby-rates-for-combined-heat-and-power-need-a-fresh-look/. Full report: raponline.org/wp-content/uploads/2016/05/rap-standbyratesforchpsystems-2014-feb-18.pdf.

[11] See the full analysis of Iowa rates here: iowaeconomicdevelopment.com/userdocs/documents/ieda/Iowa-On-Site-Generation-Tariff-Barrier-Overview_April-20121.pdf#.

send price signals that encourage investment in more efficient use of electricity and give customers an incentive to maximize the benefits of distributed generation.

Recommendation: The final version of the manual should focus on the best practices outlined above to address the challenges associated with standby rates for customers utilizing CHP.

IV. Full Revenue Decoupling

Full revenue decoupling is addressed in the draft manual within the context of utility revenue erosion and cost recovery.[12] Full revenue decoupling has also increased in recent years as utility sales have flattened or declined. ACEEE fully supports the use of full revenue decoupling to ensure utilities are able to recover authorized costs.[13] Full revenue decoupling also effectively balances risk between a utility and its customers. Utilities are protected from under recovery of revenues while customers are protected from over recovery.

One primary concern of decoupling mechanisms has been rate impacts to customers. A recent study on revenue decoupling evaluated rate impacts for decoupling mechanisms nationally.[14] This report is included with these comments at Attachment E. This research shows that rate impacts have been minimal. Morgan examined a set of 1269 rate adjustments made due to decoupling mechanisms since 2005. She found that the vast majority (64%) of such adjustments have been only plus or minus 2% of retail rates. This translates to customer surcharges or credits of $2.30 per month for the average electric customer and about $1.40 per month for the average natural gas customers. About 80% of all such adjustments are within the range of plus or minus 3%. In short, decoupling does generally not lead to wide rate swings. Of all the adjustments included in Morgan's research, 63% were surcharges and 37% were refunds. She concludes that there is no pattern of either rate increases or decreases.

While revenue decoupling is not a compensation methodology, it is a mechanism that would alleviate utility concerns of revenue erosion and cost recovery. Such a policy would allow a utility to pursue a DER compensation methodology approach that encourage investment in cost effective DERs.

Recommendation: The final version of the manual should promote full revenue decoupling as a policy that balances the interests of utilities and customers by ensuring cost recovery while still promoting the investment of cost effective DERs.

V. Rates that Balance the Interest of Utilities and the Public

ACEEE notes that several rate options presented in the draft manual are well designed to recover utility costs but may discourage investment in DERs. Specifically, these options include increased fixed charges and demand charges. High fixed charges are one approach that provide greater revenue stability for utilities but discourage customer investment in energy efficiency and changes in behavior to reduce usage. ACEEE also disagrees that recovery of costs considered fixed in a fixed charge matches cost causation. Just because a utility's overall short

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[12] *See* draft manual, page 22.

[13] We define full revenue decoupling as a decoupling mechanism which adjusts utility revenues on a periodic basis to ensure a utility does not over or under recovery commission authorized revenues. We do not include lost revenue, weather, or other partial decoupling mechanisms in this definition.

[14] Morgan, P. 2012. "A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs, and Observations." Graceful Systems LLC. November. aceee.org/files/pdf/collaborative-reports/decade-of-decoupling.pdf.

term costs are fixed does not mean collecting the average of these costs for each residential customer matches cost causation. This method of cost recovery will over collect system costs from some customers while under recovering from others.

The draft manual also details the use of demand charges as a potential compensation methodology. Demand charges have not been historically used to collect revenues from residential customers. While there are a few electric utilities with optional demand charge rates, very little data exists on how customers respond to demand charges. In a recently published paper on rate design, the Rocky Mountain Institute reviewed the experience with residential customers on demand charges.[15] The research concluded that the impact of demand charges on peak demand and overall consumption reduction are unclear at this time and require more research.

Recommendation: The final version of the manual should reject increasing fixed charges as a potential compensation methodology approach for DERs. Demand charges should also be approached with caution as a solution to cost recovery concerns due to the lack of information and data on customer response and peak load reduction.

VI. Time of Use Rates

Time of use rates are not included as a potential compensation method in the draft manual. Several states, including Arizona and California, are beginning to transition residential customers to default time of use rates to address issues related to DER proliferation and utility cost recovery concerns.[16,17] Time of use rates are well understood by customers and provide substantial demand reduction benefits.[18] Time of use rates also match cost causation as recovery of costs is linked to the time of day, week, and year when system costs are incurred to serve demand.

Recommendation: The final draft of the manual should include a discussion of time of use rates as a potential compensation methodology alterative to demand charges or higher fixed charges.

VII. The Rate Design Subcommittee and Stakeholder Involvement

ACEEE commends the rate design subcommittee for undertaking this effort. As the utility industry continues to transform, the work of groups such as the NARUC rate design subcommittee will be greatly needed. Collaborative efforts among states dealing with similar challenges can be very beneficial to all involved. While

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[15] *See* Rocky Mountain Institute. 2016. "A Review Of Alternative Rate Designs Industry Experience With Time-Based And Demand Charge Rates For Mass-Market Customers." rmi.org/Content/Files/alternative_rate_designs.pdf.

[16] *See* final order and decision issued August 18, 2016, UNS Electric, Docket No. E-04204A-15-0142. images.edocket.azcc.gov/docketpdf/0000172763.pdf.

[17] *See* Order Instituting Rulemaking on the Commission's Own Motion to Conduct a Comprehensive Examination of Investor Owned Electric Utilities' Residential Rate Structures, the Transition to Time Varying and Dynamic Rates, and Other Statutory Obligations, "Decision on Residential Rate Reform"D.15-07-001 (July 13, 2015)

[18] *See* Faruqui, A., Hledik, R., and J. Palmer. 2012. "Time Varying and Dynamic Rate Design." Regulatory Assistance Project and The Brattle Group. raponline.org/wp-content/uploads/2016/05/rap-faruquihledikpalmer-timevaryingdynamicratedesign-2012-jul-23.pdf.

the rate design subcommittee was formed to draft the DER compensation manual, other rate design issues may benefit from a national perspective. The subcommittee also greatly benefits from the input and involvement of outside stakeholder groups closely involved with rate design issues in various states. Therefore, it is imperative to continue the collaborative process with outside stakeholders.

Recommendation: The rate design subcommittee should remain a permanent NARUC subcommittee and continue collaborative efforts among states and with outside stakeholders to address issues in rate design.

VIII. The DER Draft Manual

Many of the technologies highlighted in this draft manual are undergoing rapid advancement. As these technologies continue to transform, it will be important to revisit the DER compensation manual to ensure the approach is still aligned with current practice. It will also be important to periodically update the manual as new information is obtained, such as customer response to various pricing approaches.

Recommendation: Make the DER compensation manual a living document and update it periodically to reflect new information and current experience.

Sincerely,

Brendon Baatz

Manager, Utilities Policy