

**Comments on the DER Compensation Manual from Steffes**

August 29, 2016

**Questions**

1. Has the draft Manual addressed the issue in a comprehensive and useful manner?

Answer: Yes

2. Are there any other considerations not included in the draft Manual that impact Distributed Energy Resources?

Answer: In this case, there are several additional segments that the Staff Subcommittee may want to consider to address this particular question and add these sections to the manual: The rapidly emerging variable nature of the value of a kWh due to DER's; "Intelligent Efficiency"; Coordination of Programs to help optimize DER impacts; Grid-Services performed by DER's; and Security.

**Time value of a kWh:**

In California they are studying the "Time Dependent Value of Energy" which is recognition that there is a highly variable value of a kWh of produced energy. This phenomenon is particularly evident in the difference in value of a kWh generated mid-day during overproduction of PV energy compared to that of an otherwise identical kWh produced during the late afternoon / early evening sharp ramp in energy requirements as generation transitions out of the solar day. This new paradigm has vast implications.

**"Intelligent Efficiency"**

First introduced in June 2012 by ACEEE "Intelligent Efficiency" refers to a systematic approach to saving energy that marries traditional energy efficiency with wireless and cloud-based computer technologies. Technology enhances our ability to gather, interpret, and act upon energy information in order to improve performance and achieve new levels of energy savings. ACEEE indicated at that time that "intelligent efficiency could reduce the nation's energy use by 12 to 24 %."

**Coordination of programs:**

The Hawaii Consumer Advocate made a comment about coordination in DOCKET NO. 2007-0323 on August 4th 2016 saying: "A comment that the Consumer Advocate has offered in the past, but bears reiteration is that there should be better integration between the annual plans developed by HE\* and the utilities' plans. With the understanding that there are various types of energy efficiency and demand response programs available, there should be a coordinated effort to determine the optimal plans to meet customers' demand for affordable and reliable electric service."

*\* Hawaii Energy is the ratepayer-funded energy conservation and efficiency program under contract with the Hawaii Public Utilities Commission*

"Thus, the Consumer Advocate encourages the Commission to consider the need to better integrate planning efforts that are currently separately conducted to ensure that short-term and long-term planning efforts do not result in duplicative efforts to address the same electric service needs with different resources, such as energy efficiency, demand response, and generation (whether utility scale or distributed)."

**Security:**

In February 2013 the Administration put out a Presidential Policy Directive on Critical Infrastructure Security and Resilience saying “Critical infrastructure must be secure and able to withstand and rapidly recover from all hazards.” A couple of months later former CIA Director Woolsey was quoted as saying: “The problem mainly with the grid is that everything depends on it and in itself has some very substantial vulnerabilities. We need to move as quickly as possible to generating power where the load is.”

Also in August 2015 the U.S. Pacific Command (PACOM) held a daylong program on cyber-secure microgrids at Camp Smith in Hawaii. The project is named Smart Power Infrastructure Demonstration for Energy Reliability and Security (SPIDERS). A session by Daryl Haegley out of the Office of the Assistant Secretary of Defense focused on the highly sophisticated and unrelenting cyber attacks that they were seeing across the grid.

The point here is that there is likely a substantial but as yet undefined value for DER’s for security as they proliferate across a Distributed Grid.

3. Are there other compensation options not included in the draft Manual?

Answer: Although we will be seeing a rapid proliferation of “non-export” premise optimization of largely driven solar DER’s, aggregation of large fleets of DER’s and the utilization of those pooled assets for grid-services ultimately creates the greatest grid, distribution system, and total stakeholder values.

4. How could the Manual be written in a way that is more useful to regulators?

Answer: In addition to the written manual, NARUC may want to consider online tutorials (with Commissioner Akiba and former Commissioner Champley key in the design of those trainings).

5. Should the draft Manual include a discussion of distribution system planning or distribution system operators?

Answer: Yes, since more duty and reliability responsibilities will likely migrate closer to or at the grid-edge we believe that EPRI’s studies: “The Integrated Grid: A Benefit-Cost Framework”; “Capacity and Energy in the Integrated Grid”; and “Realizing the Full Value of Central and Distributed Energy Resources” can help guide discussion regarding the Distribution System.

6. Does the draft Manual provide sufficient discussion on considerations of equitable treatment between customers in the context of ratemaking?

Answer: Yes

7. Since the initial survey and request for information was released in March 2016, have there been any new developments that the Staff Subcommittee should take into account in this draft Manual?

Answer: Yes, in fact a very major development just happened in early August when Energy + Environmental Economics, Inc. (“E3”) delivered an update to the Nevada PUC. This report and the explanations on the dramatic reversal from E3’s earlier conclusions is an extremely current, dramatic, and remarkable tool to help refine the DER Manual.

As background, on May 2, 2016, the [Legislative Committee on Energy](#) requested that the Public Utilities Commission of Nevada (“PUCN”) contract with to update E3’s [2014 Net Energy Metering \(“NEM”\) study \(PDF\)](#).

The Committee requested that E3 use updated data provided by the utilities so that the two sets of results may be compared. Additionally, the update was to address 1) “any transfers (positive

or negative) between participants or nonparticipants under a rate design, such as the one that existed in Nevada prior to 2016, in which NEM customers pay the same fixed charges as non-NEM customers while being compensated at the retail rate for energy fed back to the grid by their distributed energy resources;” and 2) “the cost, if applicable, to Nevada rate payers of reversing the decision not to grandfather older systems onto the prior rates.”

On August 17, 2016, E3 submitted the final update to the PUCN. The PUCN opened [Docket No. 16-08031](#), an informational docket entitled “Nevada Net Energy Metering Impacts Evaluation 2016 update prepared at the request of the Legislative Committee on Energy,” in which the update and relevant documents are available to the general public.

**E3 July 2014 Nevada Net Energy Metering Impacts Evaluation (page 7 – 8)**

“Overall, we do not estimate a substantial cost shift to non-participants due to NEM going forward given the current and proposed reforms to the program. We estimate a total NPV benefit of 2004-2016 NEM systems to non-participating ratepayers of \$36 million during the systems’ lifetimes. Whether NEM systems are a net cost or net benefit to non-participants is sensitive to some key input assumptions, as demonstrated by the sensitivity results (Section 1.2.3), but in either case should be relatively small.”

**E3 August 2016 Nevada Net Energy Metering Impacts Evaluation 2016 Update (page 7)**

“There is a cost-shift from NEM customers to non-participating customers for both existing installations and future installations. In total, existing installations shift approximately \$36 million per year (*sic*) while an equivalent amount of hypothetical future installations would shift an additional \$15 million per year. For existing systems, \$20 million of the \$36 million per year is a “sunk cost” that has already been spent in the form of incentive payments. Therefore, we estimate the cost of grandfathering existing systems to the old NEM rate structure to be approximately \$15 million per year<sup>2</sup>. This amounts to a levelized cost shift of \$0.08/kWh for existing installations and \$0.04/kWh for future installations.”

Reportedly the sharply lower cost of utility-scale solar resources was the primary driver in the swing in the calculations along with the much lower cost of natural gas generation compared to the values used in the 2014 model. In addition DER benefits (such as estimates on the potential grid-services) or societal / environmental costs were excluded from the analysis.

**8. Is the draft Manual missing any key technologies that should be included?**

Answer: Yes, a technology that our company, Steffes, has developed will help optimize DER’s and aggregate them into fleets in order to provide very valuable real-time grid-services. We believe that this cost-effective energy storage (Grid-Interactive Water Heating - GIWH) will help optimize the behind-the-meter energy storage platform while simultaneously absorbing damaging volatility from variable renewable energy resources.