

Brief survey of State NEM policies/rules

Minnesota Value of Solar (“VOS”)

VOS Background:

Minnesota legislation allows Investor-Owned Utilities (“IOUs”) to apply to the Public Utility Commission (“PUC”) for a VOS tariff as an alternative to net energy metering and as a rate identified for community solar gardens. The Department of Commerce was assigned the responsibility of developing the methodology for calculating the VOS tariff and submitting it to the PUC by January 31, 2014. Utilities adopting the VOS will be required to follow this methodology¹ when calculating the VOS tariff.

VOS Billing:

The legislation also mandated a method of implementation, whereby solar customers will be billed for their gross electricity consumption under their applicable tariff, and will receive a VOS credit for their gross solar electricity production.

MN states that separating usages (charges) from production (credits) simplifies the rate process:

- Customers will be billed for all usage. Energy derived from the PV systems will not be used to offset (“net”) usage prior to calculating charges. This will ensure that utility infrastructure costs will be recovered by the utilities as designed in the applicable retail tariff;
- The utility will provide all energy consumed by the customer. Standby charges for customers with on-site PV systems are not permitted under a VOS rate; and
- The rates for usage can be adjusted in future ratemakings.

VOS Methodology:

The VOS, calculated for each IOU, is the sum of several distinct value components that are each calculated separately using defined procedures. The VOS methodology uses a 25 year period, to match the life of the solar system. The gross economic value of each component is converted into a distributed solar value (to account for current peak capacity benefits, called “load match factors,” and transmission and distribution loss saving factors).² These values are then summed to create the 25 year levelized value. This first year levelized value is the VOS credit given to customers, and is then adjusted annually for inflation.

¹ Minnesota Value of Solar: Methodology <http://mn.gov/commerce/energy/images/MN-VOS-Methodology-FINAL.pdf>

² As explained in the Methodology report. “For example, the avoided fuel cost does not have a load match factor because it is not dependent upon performance at the highest hours (fuel costs are avoided during all PV operating hours). Avoided fuel cost does have a Loss Savings Factor, however, accounting for loss savings in both transmission and distribution systems. On the other hand, the Avoided Distribution Capacity Cost has a Peak Load Reduction Load Match Factor, and a Loss Savings Factor that only accounts for distribution (not transmission) loss savings.”

VOS Value Components:³

1. Avoided Fuel Cost
2. Avoided Fixed and Variable Plant O&M
3. Avoided Generation Capacity Cost (capital cost of generation to meet peak load)
4. Avoided Reserve Capacity Cost (capital cost of generation to meet planning reserves for reliability)
5. Avoided Transmission Capacity Cost (avoided line loss)
6. Avoided Distribution Capacity Cost (avoided line loss)
7. Avoided Environmental Cost (externalities)⁴
8. POTENTIAL INPUT if quantified in the future - Voltage Control
9. POTENTIAL INPUT if quantified in the future - Integration costs

Applicability of VOS:

The VOS rate is applicable to all customer classes.

New Customers: Each year, a new VOS tariff is to be calculated using current data, and the new resulting VOS rate is applicable to all customers entering the tariff during the year. Changes such as increased or decreased fuel prices and modified hourly utility load profiles due to higher solar penetration will be incorporated into each new annual calculation.

Existing VOS Customers: Customers who have already entered into the tariff in a previous year will not be affected by the annual adjustment. However, these existing customers will see their VOS rates adjusted for the previous year's inflation rate.⁵

VOS Status:

Currently none of MN's IOUs have chosen to use a VOS tariff and have opted to use the applicable retail rate instead. However, VOS is under consideration as a rate for community solar garden subscribers.

Ohio

Net metering contracts are available with competitive retail electric suppliers. Rural electric cooperatives and municipal electric utilities are not required to offer net metering, but some may do so.

³ The legislation mandates the VOS tariff must take into account: energy and its delivery; generation capacity; transmission capacity; transmission and distribution line losses and environmental value. It offers the option, at a utility's discretion, to give credit for systems installed at 'high value' locations, using a location-specific distribution capacity value. The VOS uses a fleet-wide production load shape and not the load shape from a single 'representative' system.

⁴ Carbon Dioxide ("CO2") and non-CO2 emissions from Natural Gas (pounds per MMBTU) are taken from the US EPA and NaturalGas.org. The avoided environmental costs are based on the federally calculated Social Cost of CO2 emissions plus MN PUC's established externality costs for non CO2 emission (Particulate matter, Carbon Monoxide, Nitrous Oxides and Lead).

⁵ This is calculated as the average annual inflation rate over the last 25 years, using the U.S. Bureau of Labor Statistics' Urban Consumer Price Index data.

Currently under PUC review: The net metering credit was limited to kWh charges only. Net metering customers were not reimbursed for distribution or transmission services. If a customer had a demand (kilowatt) meter, these charges also will not be reimbursed. But, the PUC approved new rules (currently appealed by AEP to the Ohio Supreme Court) requiring utilities to credit customers the full retail price of electricity they provided to the grid, including the capacity portion, and the new rules would also require the IOUs to credit NEM customers of alternative sellers. There is a potential stay of a Court decision as parties asked to hold a PUCO stakeholders meetings to redraft the rules.⁶

Oregon

Deregulation for non-residential customers only. Separate net metering laws for IOUs and for municipal providers, co-ops and people's utility districts.

The Oregon PUC created NEM rules for PGE and PacifiCorp, but the Idaho PUC created rules for Idaho Power customers. Idaho power supplies about 1% of the Oregon customers. Net excess generation ("NEG") is carried over to the customer's next bill as a kilowatt-hour credit for a 12-month period. Any NEG remaining at the end of a 12-month period will be credited at the utility's avoided-cost rate to customers enrolled in Oregon's low-income assistance programs.

Texas

Not called NEM but instead called "Distributed Renewable Generation," or a "DRG system."

A customer in an area of Texas with retail electric competition may be able to sell the excess power that it produces. The customer must sell to the company from whom the customer buys electricity; however, the company is not required to purchase this power. Some companies that do purchase excess DRG power may require that the customer also subscribe to a specific retail offer. Other companies may allow the purchase and sales offers to be chosen independently by the customer.

Most areas of Texas without electric competition are served by municipal providers or co-ops. Customers in these regions should contact their utility or cooperative directly with questions about the sale of DRG power.

For customers in areas without retail electric competition who are not served by a municipal utility or cooperative, PUC rules require the utility to purchase the DRG power put into the grid at a rate equal to its "avoided cost," which is the price the utility would have paid for an equivalent amount of conventionally generated electricity.

Hawaii

The Hawaii PUC has a summary of their decision and full 300+ page Decision and Order available online at:

⁶ More information available at: <http://www.taflaw.com/news/publications/detail/1253-the-net-metering-wars-ohio-is-one-of-the-battlegrounds-in-the-fight-between-electric-utilities-and-net-metering-supporters>.

<http://puc.hawaii.gov/news-release/puc-reforms-energy-programs-to-support-future-sustainable-growth-in-hawaii-rooftop-solar-market/>.

The summary describes two of the options its D&O creates as follows:

“Self-Supply” systems – The Self-Supply option is for customers that primarily intend to consume all of the energy produced by their solar system onsite at their home or business, and do not need to export excess energy to the grid. These systems will typically be designed to use energy management and energy storage systems to balance onsite generation with demand. With these advanced features, self-supply systems have reduced technical impact on the grid and will receive expedited interconnection review. At this time, there is no cap on the number of Self-Supply systems that may be installed.

“Grid-Supply” systems – The grid-supply option will allow customers to export excess energy to the grid as needed, and customers will receive energy credits on their monthly bills, similar to the NEM program. The Grid-Supply option does reduce the credit rate for energy exported to the grid for participating customers, and as a result, it will reduce the overall cost of each island’s renewable energy portfolio, which benefits all customers (including those who do not have the ability to install DER). The lower credit rate for energy exported to the grid reflects the Commission’s commitment to achieve an affordable, cost-effective energy supply for all customers. There is a cap on the total capacity of Grid-Supply systems to ensure each island grid can accommodate Grid-Supply systems, complemented by community-based renewable projects, and lower cost utility-scale projects.

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IN RE: Petition of the Office of Regulatory Staff to Establish Generic Proceeding Pursuant to the
Distributed Energy Resource Program Act, Act No. 236 of 2014, Ratification No. 241, Senate Bill No. 1189

Docket No. 2014-246-E
Order No. 2015-194

South Carolina Public Service Commission

March 20, 2015

ORDER ON NET METERING AND APPROVING SETTLEMENT AGREEMENT

BY THE COMMISSION.

I. INTRODUCTION

*1 This matter comes before the Public Service Commission of South Carolina ("Commission") following the Petition filed by the Office of Regulatory Staff ("ORS") requesting that the Commission convene a generic proceeding pursuant to Section 58-4020(F)(4) (Supp. 2014) of the Distributed Energy Resource Program Act ("the Act") for the purposes of implementing the requirements of Chapter 40, Net Metering. The procedure followed by the Commission is set forth in S.C. Code Ann. § 58-40-20, which requires a generic proceeding to allow the implementation of requirements of Chapter 40 with respect to the net energy metering rates, tariffs, charges, and credits of electrical utilities, specifically to establish the methodology to set any necessary charges and credits and the participation of all interested parties.

Petitions to Intervene were filed by the following parties: South Carolina Energy Users Committee ("SCEUC"); South Carolina Coastal Conservation League ("SCCCL"); Southern Alliance for Clean Energy ("SACE"); Solbridge Energy LLC; Sustainable Energy Solutions, LLC; The Alliance for Solar Choice ("TASC"); The Sierra Club; South Carolina Solar Business Alliance, LLC ("SBA"); The Electric Cooperatives of South Carolina, Inc. and Central Electric Power Cooperative, Inc. (collectively, the "Cooperatives")¹; Frank Knapp, Jr.; Nucor Steel - South Carolina ("Nucor"); Wal-Mart Stores East, LP, and Sam's East, Inc. ("Wal-Mart"). Electrical utilities Duke Energy Progress, Inc., Duke Energy Carolinas, LLC, (collectively "Duke") and South Carolina Electric & Gas Company ("SCE&G") (individually, "Utility" and collectively, the "Utilities") participated pursuant to Section 58-40-20(F)(4). SCEUC was represented by Scott Elliott, Esquire; SCCCL and SACE were represented by J. Blanding Holman, IV, Esquire, and Katie C. Ottenweller, Esquire; Solbridge Energy LLC and Sustainable Energy Solutions, LLC were represented by Richard L. Whitt, Esquire; TASC was represented by Thadeus B. Culley, Esquire, and Joseph M. McCulloch, Jr., Esquire; The Sierra Club was represented by Robert Guild, Esquire; SBA was represented by Bonnie Loomis, Esquire; the Electric Cooperatives of South Carolina were represented by Michael N. Couick, Esquire, Christopher R. Koon, Esquire, Charles L.A. Terreni, Esquire, and Frank R. Ellerbe, III, Esquire; Central Electric Power Cooperative was represented by John H. Tiencken, Jr., Esquire, and Paul J. Conway, Esquire; Frank Knapp, Jr. appeared *pro se*; Nucor was represented by Robert R. Smith, II, Esquire, Garrett A. Stone, Esquire, and Michael K. Lavanga, Esquire; Wal-Mart was represented by Derrick Price Williamson, Esquire, and Stephanie U. Roberts, Esquire; Duke was represented by Charles Alex Castle, Esquire, Heather S. Smith, Esquire, and Bonnie D. Shealy, Esquire; and SCE&G was represented by K. Chad Burgess, Esquire, and Belton T. Zeigler, Esquire. The Petitions to Intervene were granted by the Commission. ORS, automatically a party pursuant to S.C. Code Ann. § 58-4-10(B) (Supp. 2014), was represented by Andrew M. Bateman, Esquire, and Shannon Bowyer Hudson, Esquire.

*2 Commission Hearing Officer David Butler, Esquire, issued the procedural schedule on August 28, 2014, setting forth December 11, 2014, as the due date for direct testimony and January 13, 2015, as the due date for rebuttal testimony.

On December 11, 2014, ORS filed a Settlement Agreement ("Settlement Agreement") with the Commission on behalf of ORS, the Utilities, the Cooperatives, Frank Knapp, Jr., Nucor, SBA, SCCCL, SACE, Solbridge Energy LLC, Sustainable

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Energy Solutions, LLC, and TASC ("Settling Parties"). The Settlement Agreement is attached hereto as Order Exhibit 1 and is incorporated in and made part of this Order.² Along with the Settlement Agreement, ORS filed settlement testimony of Leigh C. Ford, ORS Electric Department Manager, and settlement testimony and exhibits of Kushal D. Patel, consultant for Energy + Environmental Economics, Inc. ("E3").³ Also on December 11, 2014, the various parties filed testimony from the witnesses named below.

SCE&G filed the direct testimony and exhibits of W. Keller Kissam, President of Retail Operations for SCE&G; Joseph M. Lynch, Manager of Resource Planning for SCANA Services, Inc.; and Allen W. Rooks, Manager of Electric Pricing and Rate Administration at SCANA Services, Inc. Exhibits were included with the direct testimony of witnesses Kissam, Rooks and Lynch.⁴

Duke filed direct and settlement testimony of Jeffrey R. Bailey, Director, Rate Design and Analysis for Duke Energy and its affiliated utility operating companies; Emily O. Felt, Manager of Strategy and Policy in the Distributed Energy Resources group at Duke Energy; and Glen A. Snider, Director of Carolinas Resource Planning and Analytics. An exhibit was included with the testimony of witness Bailey.⁵

The Cooperatives filed the direct testimony of Floyd L. Keels, President and Chief Executive Officer of Santee Electric Cooperative, and Richard J. Macke, Vice President and head of the Economics, Rates, and Business Planning Department at Power System Engineering, Inc.

Wal-Mart filed direct testimony of Kenneth E. Baker, Senior Manager of Sustainable Regulation and Legislation.

*3 TASC filed the direct testimony and exhibits of R. Thomas Beach, Principal Consultant of Crossborder Energy; James M. Van Nostrand, Associate Professor and Director of the Center for Energy and Sustainable Development at the West Virginia University College of Law; and Justin R. Barnes, Senior Research Analyst with EQ Research LLC.⁶

SCCCL and SACE filed the direct testimony of Tommy Vitolo, an Associate with Synapse Energy Economics. Exhibits were included with the direct testimony of witness Vitolo.⁷ On December 12, 2014, SCCCL and SACE filed the direct testimony of John D. Wilson, Director of Research for SACE. Exhibits were included with the direct testimony of witness Wilson.⁸ On December 12, 2014, the Cooperatives filed exhibits to the direct testimony of witness Keels.⁹ Also, on December 12, 2014, the SBA filed joint settlement testimony of Paul Fleury, co-owner of Sustainable Energy Solutions, LLC, and Grant Reeves, Senior Vice President of The InterTech Group, Inc.

On December 23, 2014, SCCCL and SACE filed amended direct testimony and exhibits of Tommy Vitolo and John D. Wilson. Each witness' amended testimony contained one additional question and answer meant to clarify that to the extent information in either direct testimony conflicts with the Settlement Agreement, SCCCL and SACE filed those portions of the testimony for the Commission's consideration only if the Commission rejected the Settlement Agreement as proposed. On January 2, 2015, TASC filed amended direct testimony and exhibits of witnesses Beach, Van Nostrand, and Barnes. Each witness' amended testimony contained one additional question and answer meant to clarify that to the extent information in direct testimony conflicts with the Settlement Agreement, TASC filed those portions of the testimony for the Commission's consideration only if the Commission rejects the Settlement Agreement as proposed.

While all of the Settling Parties support the Settlement Agreement, many parties filed direct testimony asserting alternative positions, and the Utilities filed rebuttal testimony asserting their respective positions in the event that the Commission did not approve the Settlement Agreement. On January 13, 2015, Duke filed rebuttal testimony of Jeffrey R. Bailey and Glen A. Snider, and SCE&G filed rebuttal testimony of Joseph M. Lynch and Michael T. O'Sheasy, Vice President with Christensen Associates, Inc. An exhibit was included with the rebuttal testimony of SCE&G witness O'Sheasy.¹⁰

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*4 On January 30, 2015, Wal-Mart filed a verification of the direct testimony of Kenneth E. Baker. On February 2, 2015, SCCCL and SACE filed a verification of the amended direct testimony of John D. Wilson. TASC filed a verification of the amended direct testimony of R. Thomas Beach and James M. Van Nostrand on February 2 and 4, 2015, respectively. The verifications were required by the Commission pursuant to Commission Order Nos. 2015-89, 2015-90, and 2015-91 for those witnesses seeking to be excused from the generic proceeding hearing.

Lastly, prior to the hearing, the three non-settling parties communicated to the Commission and the Settling Parties that, although they are not signatories to the Settlement Agreement, they do not oppose its adoption by the Commission.

II. JURISDICTION OF THE COMMISSION

In accordance with S.C. Code Ann. § 58-40-20(F)(4) (Supp. 2014), the Commission "shall initiate a generic proceeding for purposes of implementing the requirements of this chapter with respect to the net energy metering rates, tariffs, charges, and credits of electrical utilities, specifically to establish the methodology to set necessary charges and credits as required under items (1) and (2)." Sections (F)(1) and (F)(2) state as follows:

(F) Any and all costs prudently incurred pursuant to the provisions of this chapter by an electrical utility as approved by the commission and any and all commission approved benefits conferred by a customer-generator shall be recoverable by each entity respectively in the electrical utility's rates in accordance with these provisions:

(1) The electrical utility's general rates, tariffs, and any additional monthly charges or credits, in addition to any other charges or credits authorized by law, to recover the costs and confer the benefits of net energy metering shall include such measures necessary to ensure that the electrical utility recovers its cost of providing electrical service to customer-generators and customers who are not customer-generators.

(2) Any charges or credits prescribed in item (1), and the terms and conditions under which they may be assessed shall be in accordance with a methodology established through the proceeding described in item (4). The methodology shall be supported by an analysis and calculation of the relative benefits and costs of customer generation to the electrical utility, the customer-generators, and those customers of the electrical utility that are not customer-generators.

Consistent with the requirements of S.C. Code Ann. § 58-40-20 (F)(4) (Supp. 2014), the Commission convened a generic proceeding to determine the reasonableness of the Settling Parties' methodology and whether acceptance of the Settlement Agreement is just, fair and in the public interest.

III. DISCUSSION OF THE HEARING

*5 The Commission conducted a generic proceeding on this matter on February 3, 2015, in the hearing room of the Commission with the Honorable Nikiya "Nikki" Hall presiding. At the outset of the hearing, ORS counsel described the Settlement Agreement. The methodology proposed in the Settlement Agreement ("Methodology") is as follows:

NET ENERGY METERING ("NEM") METHODOLOGY

+/- Avoided Energy

+/- Energy Losses/Line Losses

+/- Avoided Capacity

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- +/- Ancillary Services
- +/- Transmission and Distribution ("T&D") Capacity
- +/- Avoided Criteria Pollutants
- +/- Avoided CO2 Emission Cost
- +/- Fuel Hedge
- +/- Utility Integration & Interconnection Costs
- +/- Utility Administration Costs
- +/- Environmental Costs
- = Total Value of NEM Distributed Energy Resource

The following table details the components of the Methodology.

Methodology Component	Description	Calculation Methodology/Value
+/- Avoided Energy	Increase/reduction in variable costs to the Utility from conventional energy sources, i.e. fuel use and power plant operations, associated with the adoption of NEM.	Component is the marginal value of energy derived from production simulation runs per the Utility's most recent Integrated Resource Planning ("IRP") study and/or Public Utility Regulatory Policy Act ("PURPA") Avoided Cost formulation.
+/- Energy Losses/Line Losses	Increase/reduction of electricity losses by the Utility from the points of generation to the points of delivery associated with the adoption of NEM.	Component is the generation, transmission, and distribution loss factors from either the Utility's most recent cost of service study or its approved Tariffs. Average loss factors are more readily available, but marginal loss data is more appropriate and should be used when available.
+/- Avoided Capacity	Increase/reduction in the fixed costs to the Utility of building and maintaining new conventional generation resources associated with the adoption of NEM.	Component is the forecast of marginal capacity costs derived from the Utility's most recent IRP and/or PURPA Avoided Cost formulation. These capacity costs should be adjusted for the appropriate energy losses.
+/- Ancillary Services	Increase/reduction of the costs of services for the Utility such as operating reserves, voltage control, and frequency regulation needed for grid	Component includes the increase/decrease in the cost of each Utility's providing or procurement of services, whether services are based on variable load requirements and/or based

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	stability associated with the adoption of NEM.	on a fixed/static requirement, i.e. determined by an N-1 contingency. It also includes the cost of future NEM technologies like "smart inverters" if such technologies can provide services like VAR support, etc.
+/- T&D Capacity	Increase/reduction of costs to the Utility associated with expanding, replacing and/or upgrading transmission and/or distribution capacity associated with the adoption of NEM.	Marginal T&D distribution costs will need to be determined to expand, replace, and/or upgrade capacity on each Utility's system. Due to the nature of NEM generation, this analysis will be highly locational as some distribution feeders may or may not be aligned with the NEM generation profile although they may be more aligned with the transmission system profile/peak. These capacity costs should be adjusted for the appropriate energy losses.
+/- Avoided Criteria Pollutants	Increase/reduction of SOx, NOx, and PM10 emission costs to the Utility due to increase/reduction in production from the Utility's marginal generating resources associated with the adoption of NEM generation if not already included in the Avoided Energy component.	The costs of these criteria pollutants are most likely already accounted for in the Avoided Energy Component, but, if not, they should be accounted for separately. The Avoided Energy component must specify if these are included.
+/- Avoided CO2 Emissions Cost	Increase/reduction of CO2 emissions due to increase/reduction in production from each Utility's marginal generating resources associated with the adoption of NEM generation.	The cost of CO2 emissions may be included in the Avoided Energy Component, but, if not, they should be accounted for separately. A zero monetary value will be used until state or federal laws or regulations result in an avoidable cost on Utility systems for these emissions.
+/- Fuel Hedge	Increase/reduction in administrative costs to the Utility of locking in future price of fuel associated with the adoption of NEM.	Component includes the increases/decreases in administrative costs of any Utility's current fuel hedging program as a result of NEM adoption and the cost or benefit associated with serving a portion of its load with a resource that has less volatility due to fuel costs than certain fossil fuels. This value does not include commodity gains or losses and may currently be zero.
+/- Utility Integration & Interconnection Costs	Increase/reduction of costs borne by each Utility to interconnect and integrate NEM.	Costs can be determined most easily by detailed studies and/or literature reviews that have examined the costs of integration and interconnection associated with the adoption of NEM. Appropriate levels of photovoltaic penetration increases in South Carolina should be included.

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+/- Utility Administration Costs	Increase/reduction of costs borne by each Utility to administer NEM.	Component includes the incremental costs associated with net metering, such as hand billing of net metering customers and other administrative costs.
+/- Environmental Costs	Increase/reduction of environmental compliance and/or system costs to the Utility.	The environmental compliance and/or Utility system costs might be accounted for in the Avoided Energy component, but, if not, should be accounted for separately. The Avoided Energy component must specify if these are included. These environmental compliance and/ or Utility system costs must be quantifiable and not based on estimates.

***6** The Settlement Agreement was accepted into the record as Hearing Exhibit 1. Prior to the hearing and without objection from the remaining parties, the Commission granted SCE&G, Duke, SBA and ORS permission to utilize panels for the presentation of witnesses.

SCE&G presented W. Keller Kissam as its first witness. Witness Kissam provided information confirming SCE&G's commitment to promoting distributed renewable generation in South Carolina and supporting the Commission's adoption of the Settlement Agreement. Witness Kissam discussed SCE&G's current solar resources, which include a partnership with Boeing that resulted in installation of 2.6 megawatts of solar laminate on top of their aircraft manufacturing facility, and other planned projects. Additionally, witness Kissam testified that planned projects add up to fifty (50) megawatts of utility-scale solar to its system. Regarding the Act, witness Kissam briefly discussed its three primary aspects: net energy metering ("NEM"), distributed energy resource ("DER") program, and solar leasing.

SCE&G's panel consisted of witnesses Lynch, Rooks and O'Sheasy. Witness Lynch discussed his support of the Methodology, the value that SCE&G receives when a customer operates a net metered DER and how SCE&G quantifies those benefits. Specifically, witness Lynch discussed each component that comprises the Methodology and how it is applied to meet the requirements of the Net Metering Statute. Further, witness Lynch discussed the components of value that SCE&G's electric system receives when customers use a net metered DER to serve all or part of their electricity needs. For instance, the witness testified about how to define and calculate avoided energy costs. Additionally, witness Lynch explained his view on why the Methodology is the correct approach to valuing DER generation and that according to the Methodology, SCE&G has calculated that a preliminary indicative value for a net metered DER on its system is about \$49 per megawatt hour or 4.9 cents per kWh.

Witness Rooks provided an overview of SCE&G's support for the Settlement Agreement and the Methodology contained therein. According to witness Rooks, the Act provides for a 1:1 kilowatt hour ("kWh") crediting rate ("1:1 Rate") and requires a methodology to determine any necessary additional monthly charges and credits. Witness Rooks discussed the necessity of additional charges and credits in order to ensure that customer-generators pay the full cost of service that the utility provides them and that they receive full compensation for the benefits to the utility's system of the generation that they provide.

Witness O'Sheasy discussed his response to a number of issues raised by SCCCL and SACE witness Vitolo. Specifically, some of witness O'Sheasy's testimony discussed witness Vitolo's approach to calculating avoided costs, quantifying carbon dioxide costs, and calculating recovery with respect to "exports only", which was not defined by Dr. Vitolo.

***7** Duke presented Emily O. Felt as its first witness. Witness Felt provided information in support of the Settlement Agreement and the Methodology. According to witness Felt, Duke believes the Settlement Agreement represents a reasonable compromise

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among the Settling Parties, balancing the General Assembly's requirements to appropriately quantify the value of net metered DER generation with the goal of promoting development of DER. Additionally, witness Felt discussed the relative costs and benefits of NEM generation in South Carolina, whether certain categories were quantifiable, the basic manner in which the methodology will be executed, and the potential for future updates to the value of the Methodology components as addressed in the Settlement Agreement.

Duke's panel consisted of witnesses Bailey and Snider. Witness Bailey provided information that supports the implementation of the Methodology and identifies the relative benefits and costs of NEM in South Carolina and any revenue gaps caused by NEM participation in the state. Witness Bailey discussed the 1:1 Rate and the basic process by which an under- or over-recovery is determined with the Methodology. In witness Bailey's rebuttal testimony, he discussed the proposal of TASC witness Van Nostrand and CCL and SACE witness Vitolo that lost revenues include solely exported energy. According to witness Bailey, this practice would be inappropriate because it fails to recognize the true loss of revenues and the addition of administrative costs borne by the utility.

Witness Snider's settlement testimony discussed the costs and benefits resulting from the implementation of DER on a utility system and supported the Methodology. Witness Snider specifically discussed the individual components that comprise the Methodology and how the Methodology possesses the flexibility necessary to react to an ever-changing marketplace and to accurately quantify the economic impact of NEM resources. In witness Snider's rebuttal testimony, he discussed why he disagrees with the recommendation that a generic solar photovoltaic generation profile should be used to calculate the avoided energy value for a solar DER, and why the same set of economic cost effectiveness tests used for utility-sponsored energy efficiency and demand response programs are not directly applicable to DER resources. Witness Snider also explained that he disagrees with the use of Effective Load Carrying Capability ("ELCC")¹¹ to determine the value of a DER because Duke's approach is consistent with the existing capacity valuation approach used in the established avoided cost calculation in South Carolina.

The Cooperatives' witness Keels discussed the importance of this Settlement Agreement as it relates to all electric cooperatives in South Carolina and the Cooperatives' support of the Settlement Agreement. In particular, witness Keels discussed the challenges that face the Cooperatives and their rural membership base. Witness Keels explained that because the Cooperatives typically serve rural areas, their fixed costs are generally higher than the fixed costs of investor-owned utilities; however, the Cooperatives' rate structure is similar to investor-owned utilities in that variable, usage-based charges recover much of the fixed costs. The ability of certain members to reduce their usage charges through the installation and use of solar panels could, therefore, potentially require some cooperative members to subsidize the fixed costs necessary to serve members who install solar panels. Witness Keels explained that each of the state's twenty distribution cooperatives will have to adopt a net metering policy this year, and that the electric cooperatives will be able to employ the methodology established by this settlement in order to determine the true value of energy purchased from net metering consumers and transparently identify any subsidies which they may deem appropriate for members who net meter. As a result, witness Keels discussed the importance of implementing correct NEM policies such as those contained in the Settlement Agreement.

*8 The Cooperatives' second witness, witness Macke, discussed the Cooperatives' support for paragraph III.8 of the Settlement Agreement and its Methodology. According to witness Macke, the Methodology achieves the requirements of the Act because it results in the establishment of quantifiable benefits and costs of DER that can be used in the establishment of tariffs, rates, charges, etc. that ensure that the utility recovers its costs of providing service to all customers. In discussing paragraph III.8 of the Settlement Agreement, witness Macke states that it is reasonable to include categories that are not currently quantifiable as placeholders because this allows the Methodology to be dynamic and creates continuity over time.

The SBA presented a panel consisting of witnesses Fleury and Reeves. Witnesses Fleury and Reeves jointly testified that the Settlement Agreement positions South Carolina to prudently make gains in solar while protecting the interests of the rate-paying, consuming public. The witnesses stated that this Settlement Agreement opens South Carolina for solar business while cautiously and prudently defining and weighing customer cost.

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Wal-Mart's witness Baker did not attend the hearing; however, witness Baker's testimony was verified and, without objection, was stipulated into the record. Witness Baker's testimony discussed the impact that Wal-Mart has on South Carolina's economy and Wal-Mart's interests as they relate to the Act, net metering and on-site generation. Witness Baker testified that, in the past, Wal-Mart has identified a level of uncertainty regarding the availability of net metering for customers with on-site generation over 100 kW, a potential lack of uniformity regarding the availability between Duke and SCE&G and the applicability of any related charges. Therefore, witness Baker seeks clarity regarding NEM, the need for a general level of uniformity among the Utilities, and the development of on-site customer generation without implementing unnecessary charges or costs.

SCCCL and SACE prefiled the testimony of two witnesses. Witness Wilson did not attend the hearing but, at the hearing, witness Wilson's testimony was stipulated into the record without objection. Witness Wilson's amended testimony discussed his recommendation that the Commission direct the Utilities to utilize either an ELCC method or a capacity factor averaging method for determining the dependable capacity of variable renewable energy resources. According to witness Wilson, the industry has generally agreed that ELCC is the best practice and should be used in this situation. In the alternative, witness Wilson testified that the System Peak Hours method could be used to measure dependable capacity. Witness Wilson also discussed his estimates for the dependable capacity factors in South Carolina and why his estimates may be different than the Utilities' estimates.

SCCCL and SACE's second witness, witness Vitolo, discussed cost-benefit methodology and specific components that he believed the Commission should consider in evaluating NEM in South Carolina. Additionally, witness Vitolo discussed the high degree of correlation between individual solar panels in South Carolina, the modeling duration related to levelizing costs and benefits of the value of DERs, and the value of carbon emissions.

*9 TASC prefiled testimony of three witnesses; however, witnesses Beach and Van Nostrand did not attend the hearing. At the hearing, witnesses Beach and Van Nostrand's testimonies were stipulated into the record without objection. Witness Beach's amended direct testimony discussed a benefit-cost methodology for valuing distributed generation resources in South Carolina that is consistent with the Act and informed by the emerging best practices in valuing these resources. Additionally, witness Beach discussed the net metering transaction and how DER differs from demand-side resources. Witness Beach recommended that the Commission adopt a benefit-cost methodology for NEM and DER that has four key attributes: examines benefits and costs from the multiple perspectives of stakeholders, uses a long-term life-cycle analysis, focuses on NEM exports, and considers a comprehensive list of benefits and costs.

Witness Van Nostrand's amended direct testimony analyzes various provisions in the Act by discussing the "net electrical energy measurement" and the legal distinction between measuring the quantity of kWhs versus the valuation of those kWhs. Witness Van Nostrand testified that the statute provides for "true net metering," meaning the usage and production are offset over the billing period to arrive at a single number.

Witness Barnes, TASC's third witness, discussed a general overview of nationwide net metering policy and background on NEM policy in South Carolina. Witness Barnes discussed certain aspects of net metering in the national context such as net excess generation, potential cost-shifting and net metering trends. Witness Barnes also discussed the origin and evolution of net metering in South Carolina.

ORS's panel consisted of witnesses Patel and Ford. Witness Patel discussed his work as an outside consultant assisting ORS in developing a methodology to examine the costs and benefits of NEM in South Carolina. Witness Patel discussed E3's work in other states and net metering in the national context. According to witness Patel, the Methodology proposed in the Settlement Agreement is a good methodology because: it was developed through a collaborative, transparent, and stakeholder-driven process; it is dynamic and able to adapt over time to a variety of circumstances; it is relatively granular and contains quantifiable categories; and it can be applied to inform stakeholders of the costs and benefits associated with customer-sited generation over time. Additionally, witness Patel testified that the Settlement Agreement is in line with what other jurisdictions in the United States have done in the context of valuing net metered resources.

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Witness Ford provided testimony describing ORS's involvement in the proceeding, the net metering Methodology presented in the Settlement Agreement, and support for the Settlement Agreement in general. Witness Ford testified regarding the manner in which ORS served as a facilitator and resolved issues among the seventeen parties in the proceeding. Additionally, witness Ford testified to the specifics of the Settlement Agreement, including the 1:1 Rate provision and the ability of some customers to remain on a 1:1 Rate through December 31, 2025; the components of the methodology; the process by which under-recovered and over-recovered revenues are determined; and the timeline Utilities have to file new net metering tariffs.

IV. SETTLEMENT AGREEMENT

*10 Through the testimony and exhibits presented to the Commission in this proceeding, the Settling Parties represent that all issues between them in this case have been settled in accordance with the terms and conditions contained in the Settlement Agreement, which they believe are just, fair, reasonable and in the public interest. The terms of the Settlement Agreement are summarized as follows:

(a) The Parties accept the Settlement Agreement as a whole and agree not to challenge any term or part for the duration of the Settlement Agreement, which expires January 1, 2021. However, Parties are not precluded from participating in future proceedings to set and adopt policies which will be implemented after the expiration of the Settlement Agreement.

(b) The Parties have agreed as follows:

1. The 1:1 Rate shall be preserved for the term of the Settlement Agreement;
2. The Methodology, as defined in Settlement Agreement Attachment A, shall be used to compute the value of DER generation;
3. The difference between the value of DER generation, as computed using the Methodology, and the 1:1 Rate shall be treated as a DER program expense and collected accordingly through the fuel clause. This difference shall not be recovered through base rates.

(c) Within sixty (60) days of the adoption by the Commission of a final, unappealable order that approves and adopts the terms of the Settlement Agreement as the generic net metering methodology required by S.C. Code § 58-40-20(F)(4) of the Act, the Utilities will each file with the Commission separate applications for approval of the following:

1. **Net Metering Tariffs:** New net metering tariffs (the "Net Metering Tariffs") shall incorporate the terms of the Settlement Agreement as well as the terms defined in S.C. Code § 58-40-10, including allowable customer-generator systems sized up to 1,000 kilowatts ("kW"), net metering capacity cap, annual kWh credit reconciliation, and other terms and conditions required by the Act for net metering tariffs adopted under its provisions.

2. **Net Metering Incentives:** A Net Metering Incentive, funded through a DER Program ("DER NEM Incentive"), shall be applied to qualifying net metering customers sufficient to make such customer-generators' bills equal to the bills they would have received if the power generated by their DER facilities were valued at the 1:1 Rate.

(d) The DER NEM Incentive will be applied to customer-generators receiving service under the Net Metering Tariffs prior to January 1, 2021. DER NEM Incentives shall be available to these customers through December 31, 2025, or until these customers elect to receive service under a different tariff, whichever occurs first.

(e) The Parties have convened and developed, according to a process managed by ORS and E3, a specific, standardized methodology for assessing costs and benefits of the net metering program. The Methodology includes all categories of potential costs or benefits to the Utility system that are capable of quantification or possible quantification in the future. Where there is currently a lack of capability to accurately quantify a particular category and/or a lack of cost or benefit to the Utility system,

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that category has been included in the Methodology as a placeholder. Placeholder categories will be updated and included in the calculation of costs and benefits of net metering if and when capabilities to reasonably quantify those values and quantifiable costs or benefits to the Utility system in such categories become available.

***11 (f)** As set forth below, the Utilities shall use the following to compute the net estimated under-recovered (lost revenue) or over-recovered revenue (net benefit) from net metering customers under existing rate structures, based on the Utility's cost of service study within its last general rate case. The formula used to apply the Methodology shall be as follows:

1. To determine the under-recovered or over-recovered revenue from the net metering customer:

i. Compute what the actual or a representative customer's bill would have been under the applicable standard rate, without consideration of the production of the DER.

ii. Subtract from that amount the actual or a representative customer's estimated bill under the applicable standard rates with consideration of the production of the DER.

iii. Subtract from that amount the net benefits delivered by the DER as computed according to the Methodology and based upon the production of the DER.

iv. If the final number is positive, the result is the "underrecovered revenue from the net metering customer."

v. If the final number is negative, the result is the "overrecovered revenue from the net metering customer."

2. For under-recovered revenue, calculate the amount of any DER NEM Incentive to be applied to allow a net metering customer to achieve the 1:1 Rate for gross production from the net metering facility.

3. For over-recovered revenue, calculate the credit, if any, to be applied to a net metering customer.

i. No DER NEM Incentive shall be provided when the net metering customer receives a credit.

(g) The costs and benefits of net metering and the required amount of the DER NEM Incentive shall be computed and updated annually coincident in time with the Utility's filing under the fuel clause.

(h) Each Utility shall file reports with the Commission and copy ORS when the following participation levels are reached to identify and illustrate the costs unrecovered, if any, arising from customer adoption of net metered DER generation through December 31, 2020: (1) 0.5%; (2) 1.0%; (3) 1.5%; and (4) 2.0% of the Utility's previous five-year average South Carolina retail peak demand, as defined by the Act.

(i) The Parties acknowledge that the establishment of appropriate net metering rates is complicated by current Utility ratemaking methodologies which collect a substantial part of a Utility's fixed cost of providing service to customers through volumetric or kWh charges. The Utilities and any interested parties may participate in the study of these issues to be conducted by ORS as required by S.C. Code § 58-27-1050.

(j) The Utilities shall not propose any new separately enumerated charges or fees to be imposed specifically on customer-generators before the Settlement Agreement Expiration Date, and no standby service charges shall be imposed on customer-generators pursuant to the Utilities' Net Metering Tariffs before the Settlement Agreement Expiration Date.