STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 180

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of Investigation of Proposed Net Metering Policy Changes	)))	INITIAL COMMENTS OF THE PUBLIC STAFF

NOW COMES THE PUBLIC STAFF – North Carolina Utilities Commission (Public Staff), by and through its Executive Director, Christopher J. Ayers, and responds to the applications (Applications) filed November 29, 2021, by Duke Energy Progress, LLC (DEP), and Duke Energy Carolinas, LLC (DEC) (together, Duke or the Companies), for approval of their respective Revised Net Energy Metering Tariffs Rider NM and the new Rider RSC (NEM Tariffs).

1. On November 29, 2021, the Companies filed the Applications, including proposed tariffs in Docket Nos. E-2, Sub 1219, E-2, Sub 1076, and E-7, Sub 1214, and requested expedited consideration and Commission approval of the proposed NEM Tariffs, for Net Energy Metering (NEM) applications received on or after January 1, 2023.

2. On January 10, 2022, the Commission issued its Order Requesting Comments, requesting that comments on the Applications and proposed tariffs in the above-listed dockets be filed in Docket No. E-100, Sub 180. The order allowed interested parties to file initial comments on or before March 15, 2022, and reply comments on or before April 14, 2022.

3. On March 3, 2022, the Commission issued its Order Granting Extension of Time granting a 14-day extension to all parties to file comments and reply comments, with comments being due March 29, 2022, and reply comments being due April 28, 2022.

4. Several parties have requested and been granted permission to intervene, including the North Carolina Sustainable Energy Association (NCSEA), NC WARN, Vote Solar, the Southern Alliance for Clean Energy (SACE), the Carolina Industrial Group for Fair Utility Rates II and III (CIGFUR II and CIGFUR III, respectively), the Attorney General's Office (AGO), the Environmental Working Group (EWG), 350 Triangle, the North Carolina Alliance to Protect our People and the Places We Live, the Solar Energy Industries Association, the North Carolina Rooftop Solar Installers; and the North Carolina Climate Solutions Coalition. Numerous consumer statements of position have been received.

5. The Public Staff's investigation included a review of the Applications with respect to: (a) Session Law 2017-192 (HB 589), including N.C. Gen. Stat. § 62-126.4, and Session Law 2021-165 (HB 951); and (b) the procedural record in Docket No. E-100, Sub 83 (Legacy NEM). The Public Staff's investigation also involved submission of data requests to the Companies regarding the NEM Tariffs, and review of the responses. Based on its investigation, the Public Staff submits the following comments for the Commission's consideration.

Background

6. The concept of net metering, how net metering has been defined, and the cost/benefit implications associated with net metering have not changed significantly since the initial request by the North Carolina Solar Energy Association (now the North Carolina Sustainable Energy Association or NCSEA) in October 1998. NCSEA proposed rules that sought to "allow an electric utility customer who owns a small-scale renewable energy electric generating facility to 'spin the meter backwards' to net out the amount of energy consumed and the amount of excess energy generated by the customer."[1] The types of renewable energy resources, the size of those resources, limits on the amount of aggregate capacity that could enroll in an NEM program, and the costs and benefits of the program, were all at issue in the original case. Many of these issues continue to be at the forefront of the debate around NEM today.

7. On July 17 and 18, 2000, DEC and DEP, respectively, proposed to implement an experimental NEM rider limited to 25 participants each for systems that were 10 kilowatts (kW) or less in capacity, where excess energy delivered to the grid, would be compensated under PURPA[2] avoided costs rates.[3] Non-residential customers would be subject to metering and stand-by charges.[4] The

[1] A Proposed Commission Rule to Require Net Metering and Standardized Interconnection for Small Scale Renewable Electrical Generators, filed as an Attachment to the Commission's Order Initiating Investigation and Requesting Comments, issued Nov. 18, 1998, in Docket No. E-100, Sub 83.

[2] Public Utility Regulatory Policies Act (PURPA, Pub.L. 95–617, 92 Stat. 3117, enacted November 9, 1978).

[3] Carolina Power & Light's Petition for Approval of Photovoltaic System (Experimental) Rider PV-1, filed July 17, 2000, in Docket No. E-100, Sub 83; Duke's Petition for Approval of Rider PV, Photovoltaic Systems Pilot, filed July 18, 2000, in Docket No. E-100, Sub 83.

[4] *Id.*

Commission approved the experimental riders on August 4, 2000.[5] This paradigm continued until the mid-2000s when NCSEA requested to reopen the docket,[6] resulting in the Commission issuing its Order Adopting Net Metering dated October 20, 2005 (2005 NEM Order).

8. The 2005 NEM Order established a firm framework for NEM. The order:

- Noted that all parties conceded that allowing net metering will result in the potential for subsidies for those customers (emphasis added);
- Referred to "net metering" as a:

> …billing arrangement whereby the customer-generator is billed according to the difference over a billing period between the amount of energy consumed by the customer at its premises and the amount of energy generated by the renewable energy facility. "True" net metering allows the customer generator to receive a billing credit for excess generation delivered to the utility grid. Net metering proponents advocate the use of a single meter allowed to spin forward and backward to automatically credit the customer-generator for this excess generation;

- Removed any limit on participation;
- Established the size of systems eligible for NEM as those with a capacity of less than or equal to 20 kW and 100 kW for residential and non-residential NEM systems, respectively;
- Disallowed the use of battery storage;

[5] Order Allowing Rate Riders to Become Effective and Requesting Comments, issued Aug. 4, 2000, in Docket No. E-100, Sub 83.

[6] NCSEA's Request to Reopen Docket No. E-100, Sub 83, filed May 18, 2005.

- Required NEM customers to be on a time-of-use (TOU) rate schedule;
- Required that excess energy credits be compensated at rates commensurate with the TOU period (on-peak rates applied to on-peak excess energy, etc.);
- Eliminated stand-by charges of any kind; and
- Established that excess energy credits would apply to a subsequent monthly billing period and be reset to zero at the beginning of each summer and winter billing season.

9. NCSEA filed a motion for reconsideration of the 2005 NEM Order, arguing that the NEM rule approved by the Commission was "one of the more restrictive and difficult to use in the country."[7] In addition, NCSEA requested that the Commission open NEM to all rate schedules, allow battery storage, declare that any renewable energy credits (RECs) resulting from excess energy produced by the NEM customer were the property of the NEM customer, allow micro-hydro facilities to be eligible for NEM, and resolve interconnection issues.[8]

10. On July 6, 2006, the Commission issued its Order on Reconsideration Modifying Net Metering Tariffs and Riders, (2006 NEM Order), in response to the motion filed by NCSEA. The 2006 NEM Order:

- Maintained the application of TOU-demand rates to NEM, finding that they were not too complicated;

[7] Motion for Reconsideration by NCSEA at 1, filed Dec. 12, 2005, in Docket No. E-100, Sub 83.

[8] *Id*. at 3-7.

- Restated that on-peak excess energy should apply to on-peak consumption, and any residual excess energy would be applied to off-peak consumption for the billing month. The Commission further concluded that NEM customers were unfairly penalized under the current rates and required the utilities to amend their tariffs to reflect the application of excess generation during on- and off-peak periods;
- Modified the reset of excess energy credits by requiring they be reset once a year at the beginning of the summer season;
- Eliminated the prohibition on batteries. The Commission clarified its position as a balance between preventing any gaming that might arise from the use of off-peak excess energy to offset on-peak consumption, with the desire of NEM customers who wish to install batteries to respond to power outages;
- Restated the Commission's intent to grant RECs associated with excess energy to the utility to partially offset the costs otherwise borne by the utility and ratepayers in general that were incurred to accommodate NEM. The Commission sought to balance the competing interests with RECs and in particular with its direction on this matter by stating the following:

> Despite the potential for cross-subsidies, customers are allowed to net meter and utilities are not allowed to charge participating customers any additional standby, metering, or other charges. In return, net metering customers are required to annually grant any unused credits for excess generation and the associated RECs to the utilities for the benefit of their remaining customers. While the magnitude of these costs and

> benefits are uncertain and cannot be reasonably predicted, the Commission remains convinced that its decision appropriately allocates these costs and benefits among net metering customers, utilities, and their remaining ratepayers;[9]

- Reversed the Commission's position on micro-hydro and allowed that technology to qualify for NEM;
- Required utilities to delete any provisions in their NEM tariffs and riders that were inconsistent with small generator interconnection standards; and
- Required NEM contracts to be no longer than one year unless mutually agreed to by the customer and utility.

11. On August 20, 2007, the General Assembly ratified Session Law 2007-397 (SB3), fundamentally revising the State policy regarding renewable energy and energy efficiency to establish a new Renewable Energy and Energy Efficiency Portfolio Standard (REPS). SB3 directed the Commission to "[c]onsider whether it is in the public interest to adopt rules for electric public utilities for net metering of renewable energy facilities with a generation capacity of one megawatt or less."[10] In response, the Commission issued its Order Establishing Procedural Schedule, dated June 9, 2008, seeking input on the amount of cross-subsidization in various scenarios for larger generators; the impact of expanding net metering to large generators, including the treatment of RECs and whether additional charges would be appropriate; whether the aggregate limit on net

[9] 2006 NEM Order at 7.
[10] N.C.G.S. § 62-133.8(i)(6).

metering should be expanded; and whether net metering should be expanded to other technologies.[11]

12. The Commission further noted that the central issue in deciding whether to expand NEM to larger generators was one of cross-subsidization. The Commission restated its finding from the 2005 NEM Order:

> The Commission notes that all parties concede that allowing net metering will result in the potential for subsidies for those customers. A number of other benefits, however, have been advanced that could potentially offset any such subsidies. On balance, recognizing the benefit of additional renewable electric generation in this state, the Commission concludes that this represents an appropriate next step forward.

13. On March 31, 2009, the Commission issued its Order Amending Net Metering Policy (2009 NEM Order), making some specific findings and conclusions relevant to the present proceeding. First, the Commission concluded that changes were needed to the current NEM framework to support the recent State policy changes of SB3, including the development of renewable energy in North Carolina.[12] The Commission also reiterated its definition of NEM contained in the 2005 NEM Order, namely that NEM was a billing arrangement between the customer-generator and utility to describe the difference in the amount of energy consumed by the customer at its premises and the amount of energy generated by the customer's own generation. The 2005 NEM Order also noted that though there were few NEM customers at the time, the small number did not represent a fatal flaw in the policy of NEM. Rather, it showed that superior options for customers existed elsewhere. Nevertheless, the Commission found that several

[11] Commission Order at 2-3.
[12] 2009 NEM Order at 9.

aspects of the NEM framework needed clarification and simplification "…to conform to the recently amended generator interconnection procedures and to enhance the value of net metering as a viable alternative for customers that desire to install renewable generation to offset their own electric consumption and demand."[13]

14. Second, in response to the mandate of SB3, the Commission sought input regarding the limitations that had been imposed on NEM by the 2005 NEM Order. The Commission ultimately concluded "…that renewable customer-owned generation almost certainly provides some additional benefits and that the utilities should have acknowledged those benefits in their analyses." The Commission made this finding because it did not consider the analyses of costs and benefits to be a complete picture of the costs and benefits associated with additional and larger NEM renewable generation. The clearly articulated policy of SB3 supported expansion of NEM eligibility up to 1 MW. The Commission maintained the reset of excess energy credits at the beginning of the summer season at no cost to the utility as a means of limiting the size of individual NEM facilities and the policy of applying stand-by charges to NEM facilities that exceeded 20 kW and 100 kW for residential and non-residential NEM facilities, respectively.[14] The Commission also amended its earlier policy to allow NEM customers to have access to any retail rate schedule.

15. Third, the Commission addressed the policy of REC ownership as it relates to the RECs associated with energy granted to the utility. The Commission

[13] *Id. at* 10.
[14] 2009 NEM Order at page 11.

found that the existing REC policy provided too much uncertainty, effectively rendering the RECs earned by customer-generators to be unmarketable. The new policy adopted in the 2009 NEM Order granted ownership of all RECs to the NEM customer as long as they were served under a TOU-demand tariff. Any NEM customer not on a TOU-demand tariff would be obligated to transfer all RECs associated with its generation to the utility at no cost. The Commission found this revision to be a fair exchange for allowing NEM customers to have access to any retail rate schedule.[15]

16. The 2009 NEM Order is the last substantive order from the Commission addressing NEM policies. Recent legislation, including HB 589[16] and HB 951[17] have created a more structured approach for the development of renewable energy resources, including NEM. HB 589 provided further State policy support for small power producers (SPPs) by codifying the size of SPPs, contract terms, and value of the energy SPPs produce. Competitive procurement of renewable energy, procurement set-asides for large customers (military and universities included), community solar leasing, and net metering were promoted as ways to promote the adoption of renewable energy development. However, it is also clear from HB 589 that the General Assembly sought to ensure that the programs that would be developed pursuant to HB 589 would be cost-effective, rates paid for the energy produced by renewable energy generators would not exceed the utilities' incremental costs, non-participants of voluntary programs

[15] 2009 NEM Order at 13.
[16] https://www.ncleg.gov/Sessions/2017/Bills/House/PDF/H589v6.pdf
[17] https://www.ncleg.gov/Sessions/2021/Bills/House/PDF/H951v6.pdf

would be held harmless from a cost standpoint, and any new net metering policies would be implemented if found to be non-discriminatory and to require the NEM customer to pay the full fixed cost of service.[18]

17. HB 951 provides further support for the development of renewable generation as a means of achieving carbon reduction goals. HB 951 not only articulates specific carbon policy goals for the utilities, it also requires that utilities pursue a least cost means of developing their carbon reduction plans that require consideration of power generation, transmission and distribution, grid modernization, energy storage, energy efficiency (EE), demand-side management (DSM), and the latest technological breakthroughs in order to achieve a least cost approach. In doing so, HB 951 requires that any carbon reduction plan be accomplished under the existing laws and regulations associated with cost recovery, EE and DSM.[19] HB 951 also requires, among other things, the Commission to evaluate and modify as necessary, stand-by charges and net metering rates.[20]

18. As of December 2021, the Energy Information Administration (EIA) estimates that North Carolina has approximately 301 megawatts (MW) of small-scale solar capacity,[21] which ranks the State as 17th in the nation. Of the 16 states that have more total capacity of small-scale solar capacity, 75% have initiated or approved reforms to their NEM policies and tariffs. Of the 33 states that have less

[18] NCGS 62-126.4(b).
[19] Section 1 of HB 951.
[20] Section 5 of HB 951.
[21] Defined by the EIA as 1 MW or less, typically located at the customer's site to serve local load.

total small-scale solar capacity, only 27% have initiated or approved reforms to their NEM policies and tariffs.[22] The Public Staff believes that as distributed energy resources (DERs) such as rooftop solar generation continue to grow and mature, states across the country have been reviewing and will continue to review their respective DER policies, including NEM, to identify the benefits of DERs and reduce cost shifts between customers investing in their own DERs and customers who do not.

Application

18. Duke states that the NEM Tariffs align with the policy goals of North Carolina and HB 951, which direct Duke to reduce carbon emission 70% relative to 2005 levels by 2030 and achieve carbon neutrality by 2050.

19. The Companies state that the revised residential NEM Tariffs proposed in the instant docket were developed during a Comprehensive Rate Design Study (Rate Design Study) that investigated costs and benefits of serving NEM customers in accordance with N.C.G.S. § 62-126.4. Duke states that the NEM Tariffs received "overwhelming support" from groups representing a broad range of interests. Duke has not proposed new NEM Tariffs for non-residential NEM customers.

[22] *See* North Carolina Clean Energy Technology Center, *The 50 States of Solar: 2021 Policy Review and Q4 2021 Quarterly Report*, January 2022, at 17-24.

20. Duke utilized the results of the Rate Design Study to develop residential NEM Tariffs that "accurately capture the current cost to serve [NEM customers][23] and ensure NEM customers pay their full fixed cost of service."

21. Duke investigated the costs and benefits of residential NEM under both a marginal cost framework and an embedded cost framework. The embedded cost analysis estimated a potential monthly embedded cost cross-subsidy for each NEM customer of $25-$30 in DEC and $35-$40 in DEP. The marginal cost framework estimated a potential monthly marginal cost cross-subsidy for each NEM customer of $30-35 in DEC and $58-$63 in DEP.

22. Duke's Applications assert that the under-recovery of both the embedded and marginal costs from NEM customers primarily arises from the simplistic NEM rate design currently in effect. While the two-part rate design is generally appropriate for higher usage non-NEM customers because they have a higher correlation between demand and total energy usage, many NEM customers are able to avoid significant energy purchases from their utility; because current energy rates include fixed and other demand costs, these customers avoid paying for a significant portion of these costs. This simplistic rate design results in NEM customers receiving bill reductions larger than the actual reduction in the utility's cost to serve them. Accordingly, Duke asserts that NEM customers are not paying

[23] Unless otherwise specified, "NEM customers" as used by the Public Staff means "residential" NEM customers.

the full cost to provide them with electric service, and this cost recovery gap is currently socialized and collected from all ratepayers.

23. The Applications also included a Memorandum of Understanding (MOU) between the Companies, NCSEA, Southern Environmental Law Center (SELC), Vote Solar, SACE, Sunrun, Inc, and the Solar Energy Industries Association (SEIA) (collectively, the Stipulating Parties). The MOU lays out major areas of agreement between the Stipulating Parties, including the revised NEM Tariffs, a transition period for customers currently taking service under Rider NM (Legacy NEM customers), and a list of incentives for NEM customers (Exhibit B to the MOU) that the Companies would propose to the NCUC.[24]

NEM Tariff Description

24. The revised NEM Tariffs attempt to reduce or eliminate the cross-subsidization of NEM customers by all other ratepayers by refining the rate schedules for NEM customers to more appropriately recognize the fixed cost to serve each customer as well as the temporal value of net energy exports from NEM customers to Duke. The Applications appear to offer straightforward reform of the structure of the NEM program that comply with the requirements of HB 589 and HB 951 and should reduce the cross-subsidization of NEM customers by non-NEM ratepayers.

[24] On December 16, 2021, DEC and DEP proposed the Rooftop Incentive as the "Smart $aver" EE program in Docket Nos. E-2, Sub 1287 and E-7, Sub 1261.

25. Duke proposes to require new NEM customers taking service under the revised NEM Tariffs (which are proposed to take effect on January 1, 2023) to participate in the Companies' TOU rate schedules with Critical Peak Pricing (CPP) periods.[25] Legacy NEM customers would continue under their current rate schedules.

26. In addition to the requirement that new NEM customers take service under TOU-CPP rate schedules, Duke proposes several new monthly charges. These include: 1) a minimum bill; 2) grid access fee (GAF); and 3) non-bypassable charges. It is the Public Staff's understanding that the specific fee amounts that customers pay may be changed in future general rate cases, just as any other rate schedule may change.[26]

27. Duke proposes to institute a monthly minimum bill (MMB) amount to ensure the recovery of costs related to the distribution system that are largely fixed in nature. The initial amounts of the MMB are proposed to be $22 in DEC and $28 in DEP. As stated in the Applications, the MMB can be satisfied by the basic customer charge or basic facilities charge plus the portion of the monthly volumetric energy charges specific to customer and distribution costs, and riders.[27] If the sum of those charges is less than the proposed MMB, the MMB charge will apply to residential NEM bills. If the sum of those costs is equal to or greater than

[25] Schedule R-TOU-CPP in DEP and Schedule RSTC or RETC in DEC. These rate schedules are collectively referred to in these comments as "TOU-CPP rate schedules."

[26] See Exhibit A to Duke's Application, which states "The GAF will be initially set to the following rates (subject to change through any future rate cases in DEC-NC or DEP-NC)."

[27] Applications at 14.

the MMB, there will be no MMB charge. Legacy NEM customers electing not to transition to the new Rider RSC by December 31, 2026, will become subject to a MMB of $10 at that time, plus the amount of the basic facilities charge. As proposed, that amount would be $24 for both DEC and DEP.

28. Duke also proposes a new GAF that would apply only to solar facilities with a capacity rating greater than 15 kW direct current (DC); the GAF would only apply to the capacity in excess of 15 kW.[28] Duke stated in discovery that the GAF is intended to recover higher than average distribution-related costs that are imposed by larger NEM systems, rather than socializing those costs across all ratepayers. Duke further stated that the 15 kW-DC threshold was a negotiated level that was well above the average nameplate capacity for most residential rooftop solar systems. In contrast, the MMB is intended to recover distribution-related costs associated with an average residential system. DEP proposes a GAF of $1.50 per kW per month. While DEC proposes a GAF of $2.05 per kW per month.

29. The non-bypassable charges are designed to recover all costs related to DSM and EE, storm cost recovery, and cyber security. This fee will be based upon the full capacity rating of the NEM facility.[29] DEC proposes a non-bypassable charge of $0.36 per kW per month, and DEP proposes a non-bypassable charge of $0.44 per kW per month. These rates are derived from an

[28] The Companies note that for non-solar NEM facilities, the GAF will be based upon kW alternating current (AC).

[29] Non-solar NEM facilities will be assessed non-bypassable charges on the AC nameplate capacity.

estimation of the total kWh bypassed per kW-DC. In response to the Public Staff's discovery, Duke indicated that the DSM/EE, storm cost recovery, cyber security, and other similar charges recover costs that are not incurred on a per kilowatt-hour (kWh) basis (i.e., not classified as energy costs). A customer's rooftop solar panels do not reduce the costs that are recovered from these riders. By making these riders non-bypassable, NEM customers should contribute fully toward these costs. Duke further indicated that other riders that are recovered on a kWh basis could be bypassed. Those riders are related to excess deferred income taxes, fuel, and the competitive procurement of renewable energy. DEP also included riders related to the recovery of JAAR and RAL.[30]

30. The revised NEM Tariffs also propose to change the netting periods for imports and exports. Under current NEM tariffs (Rider NM), energy imports and exports are netted monthly, with no regard for the timing of imports and exports, and any accrued credit as of June 1 of each year is reset to zero. The revised NEM Tariffs would net exports and imports within pricing periods established by TOU-CPP rates, with any excess energy credited monthly at avoided cost rates. The requirement to reset accrued credits on June 1 would disappear under the proposal. For example, exports from a NEM customer during on-peak hours will be netted against imports during on-peak hours, and exports during off-peak hours will be netted against imports during off-peak hours. The Public Staff believes that the proposed netting of imports and exports within the same peak period would

[30] JAAR means the "Joint Agency Asset Rider to recover costs related to facilities purchased from the North Carolina Eastern Municipal Power Agency." RAL means "Regulatory Asset and Liability Rider."

reduce, though not completely eliminate, cross-subsidization. By netting exports and imports in the same peak period, Duke's proposal assigns the same value to both exports and imports. In other words, the NEM customer realizes the benefit of reducing on-peak imports with the customer's own energy. In the same manner, off-peak imports would be netted with the customer's off-peak exports. The NEM customer therefore receives full retail credit for all exports within a pricing period, up to the level of their imports; any net excess energy exported to the grid would be credited at the avoided cost rate. Excess generation produced in a particular pricing period cannot be used to reduce imports during other pricing periods. Net imports during each pricing period will be billed at the TOU-CPP rate for that pricing period.

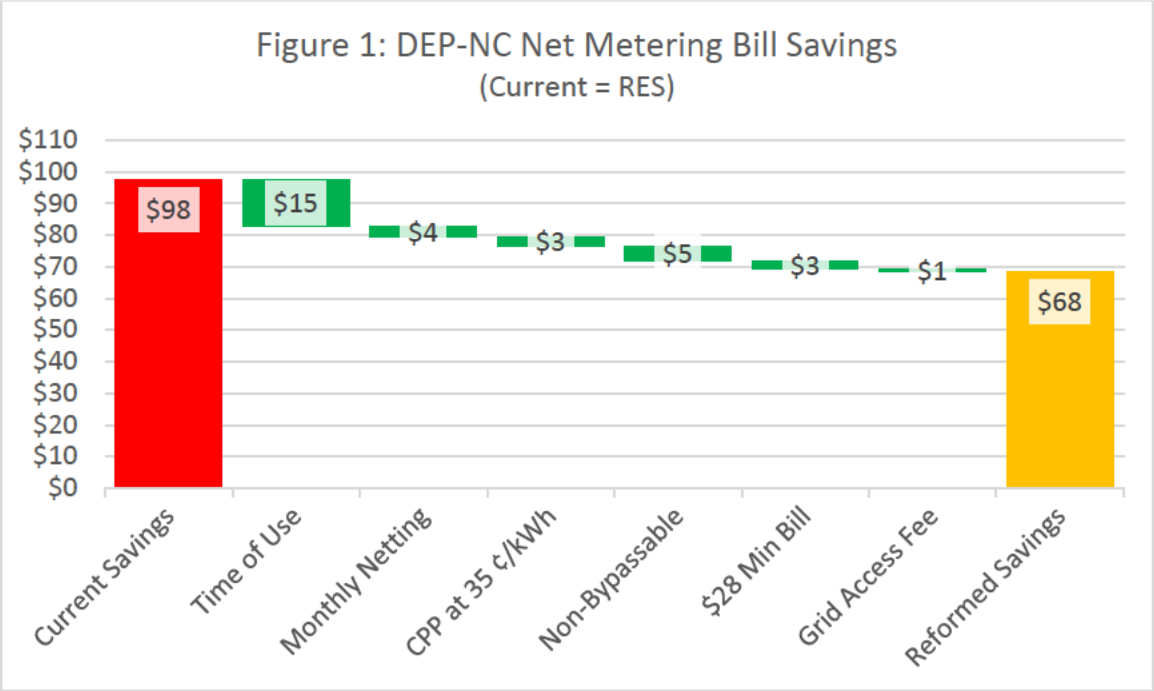
31. The only exception to the netting process is related to CPP periods. Under the TOU-CPP rate schedules, Duke is permitted to call up to 20 CPP days per calendar year. During a CPP-designated day, the CPP rate will be charged for all imports during the on-peak pricing period. The CPP rate is approximately 82% higher than the on-peak rate in DEC and 86% higher than the on-peak rate in DEP. Duke proposes that during CPP hours, the CPP rate will apply to all imports, while any energy exports during CPP hours will only offset on-peak imports. In response to the Public Staff's discovery, Duke indicated that valuing exports during CPP-designated hours at on-peak rates rather than CPP rates was based on using an average annualized avoided cost rate as a proxy for what otherwise would be a more complicated calculation.

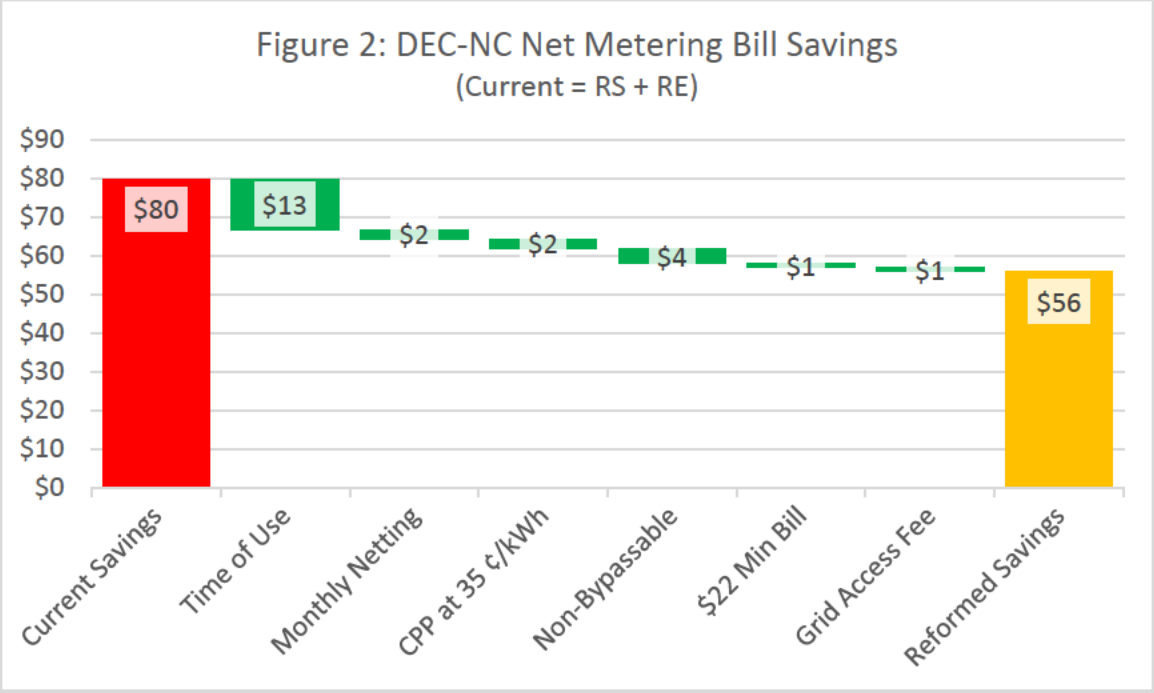
32. At the end of each month, the total net exports during each pricing period, if any, are summed and multiplied by the Net Excess Energy Credit (NEEC) to calculate the monthly bill credit issued to the customer. The NEEC is a single annual rate that is based upon the annualized two-year avoided cost rate approved by the Commission in the biennial avoided cost docket.[31] As discussed above, along with the possibility of updating the fees in general rate case proceedings, the NEEC rates may be updated within the context of the biennial avoided cost proceedings. The Companies propose to recover the NEEC bill credit paid to NEM customers through their annual fuel adjustment proceedings.

33. In its embedded and marginal cost studies, Duke estimates the impact to NEM customer savings from each NEM Tariff component. Those savings are illustrated in Figure 1 and Figure 2 below, which the Public Staff received in discovery from Duke. Duke considers the customer savings to represent the revenues that Duke does not collect from NEM customers because of the customer's solar generation; the monthly reduction in savings shown in these charts form the basis for the annual revenue reduction shown in the embedded and marginal cost studies. DEP estimates that the average NEM customer monthly savings (relative to a home with no solar) is $98 under the current Rider NM. The proposed Rider RSC would reduce savings to approximately $68. DEC estimates that the average NEM customer monthly savings (relative to a home with no solar) is $80 under the current Rider NM, and $56 under Rider RSC. The largest

[31] The NEEC proposed in each NEM Tariff is based upon avoided cost rates approved in Docket No. E-100, Sub 165. Duke has indicated it will update the NEEC upon the approval of new avoided costs.

reduction in NEM customer savings results from adopting the TOU-CPP rate schedule with intra-period netting. On average the customer savings under the proposed NEM revisions are reduced approximately 30%. Figure 1 and Figure 2 below illustrate how the average current monthly savings for a residential NEM customer are reduced by each individual component of the revised NEM Tariffs.





Treatment of Legacy NEM Customers and Non-Residential NEM Customers

34. HB 589, passed in 2017, allowed customers who installed net metering generation prior to the effective date of the revised NEM Tariffs to remain on Rider NM until January 1, 2027.[32] If the revised NEM Tariffs are approved by the Commission with an effective date of January 1, 2023, Legacy NEM customers would have a four-year transition period. The proposed modifications to Rider NM allow Legacy NEM customers to remain on Rider NM through December 31, 2026. However, certain modifications to Rider NM would allow Legacy customers who do not transfer to Rider RSC by December 31, 2026, to stay on Rider NM, but they would also be subject to new terms and conditions. Legacy NEM customers could stay on the modified Rider NM until December 31, 2036, at which point they would

[32] NCGS § 62-126.4(c).

be required to switch to the NEM Tariffs in effect at that time. The modified terms and conditions would only apply to Legacy NEM customers beginning on January 1, 2027, and include:

- Non-bypassable charges related to any volumetric price increases that occur as part of the NEM customer's rate schedules;
- An MMB of $10 plus the basic facilities charge;
- Excess energy credits valued at the Companies' avoided cost rates as specified in Rider RSC; and
- Monthly netting of excess energy credits with no carryover into the next month.

In response to the Public Staff's discovery, Duke indicated that these provisions reasonably balance the rate principles of gradualism with the financial impacts to Legacy NEM customers. Duke stated that requiring all Legacy NEM customers to switch to the revised NEM Tariffs would cause financial harm to those customers.[33] Duke further indicated that several of the policy directions and in particular, the amount of the MMB, were negotiated between the parties to the MOU in an attempt to address the cross-subsidization and interest of customers who installed NEM system in advance of this filing.

35. The modified Rider NM would net imports and exports across the entire month, similar to the current Rider NM. At the end of each month, any net exports would be credited at the NEEC rate in effect at that time, which would

[33] The Public Staff assumes that Duke is referring to the impact to Legacy NEM customers if they are required to switch to the revised NEM Tariffs on January 1, 2027, in alignment with HB 589.

eliminate the excess generation carry-forward and annual reset provisions in the current NEM tariff.

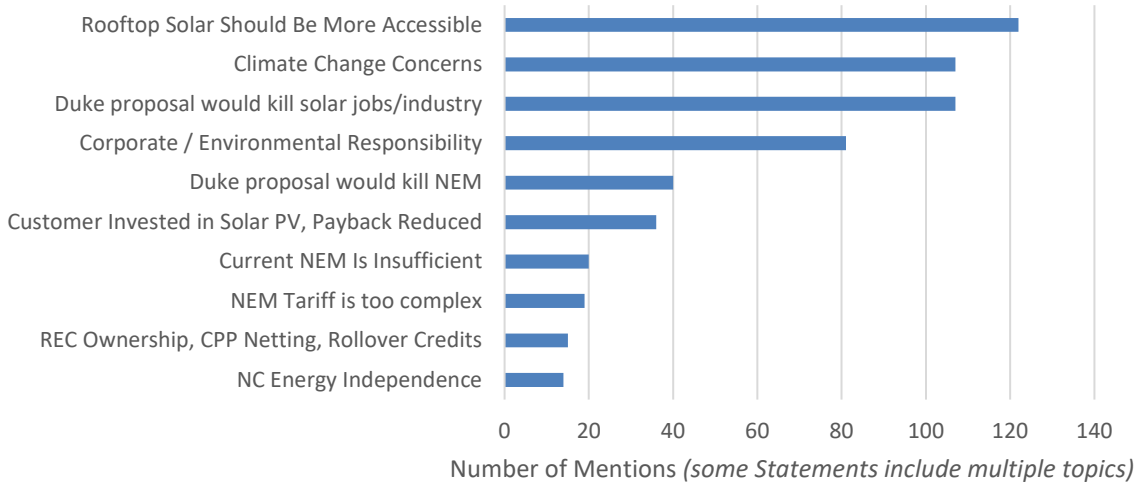
36. The Applications do not specifically address how non-residential NEM would be treated. Currently, the provisions identified in the Applications, NEM Tariffs, and the discovery responses reviewed by the Public Staff suggest non-residential NEM would remain unchanged.

37. In response to the Public Staff's discovery, Duke indicated that the Applications focused on residential NEM because concerns over cross-subsidization are more pronounced for residential NEM customers, in part due to the fact that current residential NEM customers do not have the demand charges and more sophisticated rate designs that are applied to most non-residential NEM customers. Duke further indicated that it plans to discuss non-residential NEM rate designs with stakeholders at a later time. The Public Staff did not specifically review in depth the cross-subsidy issue for non-residential NEM as part of its investigation into the Applications. The Public Staff agrees that the cross-subsidy issue is not as critical for non-residential NEM as it is for residential NEM. Nevertheless, the Public Staff strongly encourages Duke to engage with stakeholders on how non-residential NEM could be restructured, alongside residential NEM.

Public Staff Review

38. As an initial matter, the Public Staff recognizes that net metering proceedings in other states are often highly contentious, with utilities and intervenors at odds over nearly every aspect of proposed net metering revisions. The Public Staff notes the efforts undertaken by Duke and stakeholders to reach agreement on the provisions of the NEM Tariff, as reflected in the MOU which should substantially reduce the number of contested issues. The Public Staff also reviewed over 400 statements of position filed in response to the proposed NEM Tariffs, finding that the most common topics mentioned are related to making rooftop solar more accessible, generally due to climate change concerns; a fear that the revised NEM Tariffs could harm the solar industry; and a desire for corporate and environmental responsibility, as shown in Figure 3 below.

Figure 3: Consumer Statements of Position Common Topics



39. The Public Staff's review of the consumer statements in this proceeding, suggests there are some misconceptions as to the cross-subsidy issue being addressed or the impact of the modifications on the economics of net metering. The Public Staff believes that Duke's proposal will not do away with or prohibit net metering. Rather, the Applications appear to offer straightforward reform of the structure of the NEM program that comply with the requirements of HB 589 and HB 951 and should reduce the cross-subsidization of NEM customers by non-NEM ratepayers.

40. The Public Staff has reviewed the proposed NEM Tariffs and the embedded cost study and marginal cost studies that support the NEM Tariffs.[34] The Public Staff has also reviewed Duke's study methodology and inputs, including the DSMore[35] output files supporting Duke's analysis, and generally finds the methodology and results to be a reasonable analysis of the cost, benefits, and cross-subsidies associated with NEM. The primary purpose of the revised NEM Tariffs is to reduce the cross-subsidy borne by non-NEM customers, which the proposed modifications to Riders NM and the new Rider RSC largely achieve. The total subsidy is not eliminated, but it is reduced significantly.

41. In its embedded cost study, Duke first calculates the cost to serve a non-NEM customer and the cost to serve a NEM customer, based upon unit costs

[34] Embedded costs refer to costs that are already included in rate base using recent Cost of Service studies filed in Duke's general rate cases. Marginal costs refer to costs that will be incurred in the future using avoided cost estimates from recent biennial avoided cost and DSM/EE proceedings.

[35] DSMore is a model that Duke uses to estimate the benefits of DSM/EE programs. For purposes of this proceeding, its main use is to determine the amount of energy and capacity that is avoided through rooftop solar for the marginal cost study.

from their respective cost of service studies filed in the most recent general rate cases.[36] The net cost to serve both non-NEM and NEM customers includes the impact of base revenues and all riders. Next, Duke estimates the average revenue reduction (equal to the estimated customer annual bill savings relative to a non-NEM customer) expected for a NEM customer under the existing NEM tariff and the proposed NEM Tariffs, using a SAS®[37] model that estimates hundreds of customer bills under various rate structures using actual AMI customer data. The embedded cost cross-subsidy is calculated by subtracting the cost of service reduction from the revenue reduction. When the revenue reduction is greater than the reduction in cost to serve, the difference represents costs that must be recovered from all ratepayers. Under the proposed NEM Tariffs, DEC estimates that its embedded cost cross-subsidy is reduced by approximately 95% and DEP estimates that its embedded cost cross-subsidy is reduced by 102%. The embedded cost study is attached as Exhibit A.

42. In its marginal cost study, Duke first calculates the benefits of solar generation by conducting multiple DSMore model runs using a residential NEM solar generation profile as the input. These benefits include avoided energy, avoided capacity, and avoided transmission and distribution (T&D) costs.[38] The revenue reduction from NEM customers is estimated in the same manner as the

[36] See Docket No. E-7, Sub 1214, for DEC's Cost of Service Study, and Docket No. E-2, Sub 1219, for DEP's Cost of Service Study.

[37] SAS stands for Statistical Analysis System, developed by SAS Institute, Inc., a multi-national developer of analytics software based in Cary, North Carolina.

[38] Avoided energy and capacity rates are from Docket No. E-100, Sub 167. Avoided T&D rates are from the Company's most recent EE/DSM filings in Docket No. E-7 Sub 1265.

revenue reduction for the embedded cost study. The marginal cost cross-subsidy is calculated by subtracting the solar generation benefits from the revenue reduction. When the revenue reduction is greater than the reduction in cost to serve, the difference represents costs that must be recovered from all ratepayers. Under the proposed NEM Tariffs, DEC estimates that its marginal cost cross-subsidy is reduced by approximately 49%, and DEP estimates that its marginal cost cross-subsidy is reduced by approximately 78%. The marginal cost study is attached as Exhibit B.

43. The embedded and marginal cost studies estimate the reduction in cross-subsidies under expected future conditions. The actual, realized reduction in cross-subsidies may be more or less, depending on many factors. Because both analyses represent a point-in-time perspective, the Public Staff believes it is impossible to absolutely eliminate any cross-subsidy. While it could be argued that elimination of all cross-subsidy is an appropriate strategy to pursue (i.e., a target reduction of 100%), the Public Staff believes that reductions within 90% to 110%, on an embedded cost basis, are within an appropriate band of reasonableness. Duke's proposed NEM Tariffs achieve that goal. While the marginal cost study is informative, the Public Staff believes that the embedded study best represents the overall retail rate and revenue situation of the Companies. In other words, rates are set on an average or embedded basis with a directional or indicative, but not absolute, focus on marginal costs. Therefore, any efforts to reduce NEM cross-subsidies should be resolved on the same basis.

44. The Public Staff also believes that Duke has made a reasonable effort to comply with Section 6(a) of HB 589, which requires Duke to develop rates that are nondiscriminatory and to "…ensure that the net metering retail customer pays its full fixed cost of service." Quantifying the full fixed cost of service is often a highly debated topic in general rate case proceedings. Some intervening parties have asserted that the utilities have little to no fixed costs to service customers (i.e., all costs of service vary in proportion to the units of energy sold). Duke and the Public Staff have asserted that fixed costs of service do exist, particularly those costs that are related to the demand and customer functions of utility service. Duke's Applications discuss the simple two-part rate design found currently in the basic residential service rate schedules.[39] With such a simple design, all things being equal, the fixed costs of service must be recovered through the basic customer charge and the energy charges that comprise the basic residential schedules.

45. Once approved by the Commission, rate schedules are presumed just and reasonable for the recovery of the full costs to service customers (both fixed and variable costs of service) based on an average level of consumption for each customer as represented by the utility's cost of service study. The embedded cost model results in some residential customers paying more than their share of fixed costs, while others pay less. In other words, higher usage customers pay a higher share of fixed costs and lower usage customers pay a lower share of the fixed costs, but on average, residential customers as a whole are paying their full,

[39] Applications at 9.

allocated share of the fixed cost of service, including both NEM customers and non-NEM customers.

46. The Public Staff also assessed the marginal cost of compliance with HB 589. The marginal cost study suggests that NEM customers are not paying their full share of costs required to serve them, including the fixed costs of service. However, the Public Staff believes the cross-subsidies highlighted by the marginal cost study (49% reduction for DEP and 78% reduction for DEC) are not appropriate to use in this case for two reasons. First, the utilities do not set marginal rates for residential service. Marginal rate designs are more appropriate for customer classes that desire some level of non-firm service and have more sophisticated rate designs. Residential electric utility service has never been considered "non-firm" utility service. The Commission has routinely and appropriately maintained all residential customers in a single customer class that includes all residential sub-classes on all residential rate schedules (NEM and non-NEM customers alike and whether they are all-electric, gas-electric, TOU customers, etc.), because as a whole, residential customers are not materially different in their consumption behaviors. Separating NEM customers from all other residential customers and establishing rates for them on a marginal cost basis would require a more in depth analysis before establishing new rates for all residential customers. That analysis should occur only in a general rate case where all factors of cost of service and rate design can be evaluated. The Public Staff does not recommend this separation at this time.

47. Second, the benefits that NEM customers bring to the residential customer class and to the utility system result primarily from lower class demands, particularly during certain peak periods, and lower overall energy usage. NEM customers directly receive some benefits in the form of lower electric utility bills, and the system receives lower variable costs (fuel and other operational expenses) to serve the residential class. The Public Staff believes Duke's balance of costs and benefits represents a reasonable compromise between NEM and non-NEM residential customers. The Public Staff further believes that this balance must be monitored on a regular basis, as costs and benefits change and as more non-utility DERs are added.

48. The Public Staff notes that many intervenors have called for Duke to commission an independent value of solar study. While such a study may provide some additional insights into the benefits solar generation can provide, the analysis contained within the embedded and marginal cost studies captures the majority, if not all, of the known and verifiable benefits of solar generation. The Public Staff has looked to other states that have performed value of solar or value of DER evaluations. In South Carolina in 2015, the Office of Regulatory Staff commissioned a study on cost shift and cost of service analysis for DERs.[40] This study included a summary list of benefits that other states have considered in value of DER studies. The table below shows these benefits and indicates whether they

[40] See South Carolina Act 236 Cost Shift and Cost of Service Analysis, accessed on March 11, 2022 at: https://ors.sc.gov/sites/default/files/Documents/Regulatory/electricNaturalGas/Electricity/Act%20236%20Cost%20Shifting%20Report.pdf

are included in Duke's studies. While a value of DER study in North Carolina might reveal marginal additional benefits from DERs, as stated above, the studies included with this filing and reviewed by the Public Staff capture the bulk of the known and verifiable benefits. In addition, any value of DER must be based upon quantifiable benefits and costs to the utility; were Duke to compensate NEM customers for societal benefits, such payments would be passed on to all ratepayers while the benefits would not reduce ratepayer bills.

Value of DER Benefit[41]	**Included in Duke Studies**
Avoided Energy	Yes
Avoided Fuel Hedge	Yes – in avoided energy
Avoided Capacity	Yes – under proposed NEEC
Avoided Losses	Yes – in avoided energy and capacity
Avoided or Deferred T&D	Yes[42]
Avoided Ancillary Services	No
Market Price Reduction	No
Avoided Renewables Procurement	No
Monetized Environmental	Yes – in avoided energy (NO_x and SO_2 only)
Social Environmental	No
Security Enhancement / Risk	No
Societal (including economic/jobs)	No

49. Based on the data provided by the Companies, the Public Staff analyzed the impacts of the proposed NEM Tariffs on quartiles of residential customers. The customer data was separated based on solar generation in kWh as a percent of load in kWh. The top quartile of customers on average generates 102.84% of their electricity needs, leading to a current average bill of $26.38.

[41] *Id*, Figure 1 at 8.

[42] The value of avoided T&D is included in Duke's studies; however, NEM customers are not compensated for avoided T&D in the NEEC.

Under the proposal, their bill would on average increase to $57.65. On the other end of the spectrum, the bottom quartile of customers only generates 50.3% of their electricity needs, leading to an average monthly bill of $100.77. Under the proposal, their average bill would increase to $117.49. The first quartile percent change in bill would be 118.53% while the last quartile would increase by 16.59%. The Public Staff believes that generally, the NEM customers that would see the largest increase in their bills under the revised NEM Tariffs are those that are exporting the greatest amount of energy to the grid, often times generating more energy than their annual load requirements. NEM customers who have systems with capacities greater than their load requirements may also be exporting larger amounts of energy to the grid.

50. Multiple consumer statements of position have called for the rejection of Duke's revised NEM Tariffs based upon the need to transition to a cleaner, lower carbon energy future. The Public Staff notes that HB 951 required the Commission to adopt a Carbon Plan to reduce carbon dioxide emissions by 70% from 2005 levels by 2030 and achieve carbon neutrality by 2050. The costs of this public policy will be borne by all ratepayers, as with any other statute or regulation. The Public Staff recognizes this policy-oriented initiative in HB 951 and the cost-implications of pursuing this initiative. However, NEM is only one potential part of the solution and further NEM changes should be specifically based on achieving the least cost path to 70% carbon reduction by 2030. Maintaining a reasonable, methodical, and cost-based approach to accomplishing the carbon reduction goals is absolutely necessary to avoid the adverse and costly impacts

on customers of pursuing measures that are not least cost, particularly on those customers who must bear the burden of recovering such costs. The Public Staff also notes the burden on customers of paying for grid improvement costs, legacy coal ash disposal costs, and other costs incurred to modernize the production and delivery of electricity will only increase going forward, thus it is imperative to maintain a least-cost approach to HB 951 implementation. NEM should be fairly evaluated with all other options and should be incorporated into the Commission's carbon reduction plan if it constitutes a least-cost step toward compliance.

51. Another common topic found in the Statements of Position filed in this docket raised concerns about the increased complexity of the proposed NEM Tariffs. As such, the Public Staff supports Duke's commitment in the MOU to "develop an online savings calculator that will be shared and previewed with the [Stipulating] Parties for feedback within two years of the NEM Tariff's implementation."[43] With the completion and implementation of the Customer Connect billing system, the Public Staff recommends that Duke work with other interested parties to develop this online savings calculator prior to implementation of the tariffs.

52. The Public Staff disagrees with Duke's proposed treatment of CPP exports and imports. Specifically, the Public Staff believes that exports during the CPP period should be netted against imports within the CPP period, rather than netted against imports within the on-peak period. Duke has not provided sufficient

[43] *See* Applications, Exhibit A at 2.

justification for this provision. As an initial matter, Duke informed the Public Staff that generally, CPP days are designated based upon an analysis of system conditions, expected load, and the number of days in which CPP has been implemented in the calendar year.[44] Therefore, the Public Staff views exports during a CPP period to be more valuable than exports during non-CPP on-peak periods. The Public Staff recommends that Duke revise its NEM Tariffs to net CPP exports against CPP imports. In response to the Public Staff's discovery, Duke tested the hypothesis of valuing CPP exports at the CPP rate. The results suggest that valuing CPP exports at the CPP rate would have a negligible effect on costs and benefits to NEM customers, but would have the added benefits of simplifying the tariff and incentivizing NEM customers with energy storage to dispatch their energy storage devices in such a way as to reduce overall grid demand during CPP periods, which will benefit all customers.

53. The Public Staff also has concerns with the NEEC as calculated by Duke. Generally, the Public Staff recommends that the NEEC reflect (i) a solar generation profile, rather than a flat always-available generation profile, in recognition that the vast majority of net metered generation facilities are solar; (ii) seasonal differentiation between summer and non-summer seasons, rather than a single annualized flat rate; and (iii) the use of a 5-year avoided cost rate, rather than a 2-year avoided cost rate.[45] The Public Staff believes this matter is more

[44] Email correspondence between Public Staff and Duke, dated February 26, 2022.

[45] As discussed in the Public Staff's avoided cost initial comments, Duke includes NEM capacity in its IRP load projections, and Duke does not assume that this capacity is disconnected over time. NEM customers also have no other viable offtake for their excess energy, and Duke treats NEM generation as a Qualified Facility for cost recovery purposes. Thus, as Duke relies upon this

appropriately addressed within the biennial avoided cost proceeding, and has addressed these proposed modifications to the NEEC calculation methodology in its Initial Comments in Docket No. E-100, Sub 175, at 3.

54. The Public Staff believes the proposed treatment of Legacy NEM customers strikes an appropriate balance between reducing the cost cross-subsidy and providing additional financial assurances to customers who made the investment to install solar PV at their homes. While the proposed Rider NM would slightly increase the cost cross-subsidy between 2027 and 2036, the Public Staff believes this compromise avoids causing significant financial harm to customers who made their investment decision before the revised NEM Tariffs were proposed.

55. The Companies propose to continue to retain ownership of all RECs produced by NEM customers under the NEM Tariffs. These RECs will continue to be used for compliance with N.C.G.S. § 62-133.8. However, the value of these RECs has not been included in the embedded cost analysis or marginal cost analysis described above. The Public Staff notes that granting the RECs to the utility will further decrease the cross-subsidy. Using an illustrative $3 per REC price, DEP estimates that the embedded solar cross-subsidy with utility REC ownership will be reduced by approximately 102% and the marginal solar cross-subsidy will be reduced by approximately 54%. DEC estimates that the embedded

capacity when determining its reserve margin and future capacity expansion plans, it should be appropriately compensated as a Qualified Facility.

solar cross-subsidy with utility REC ownership will be reduced by approximately 112% and the marginal solar cross-subsidy will be reduced by approximately 87%.

56. To implement utility ownership of RECs, Duke's proposed Rider RSC General Provision 8 currently requires that any RECs associated with generation delivered to the grid shall be retained by the Company.[46] A similar provision exists in Rider NM, where utility ownership of RECs was designed to mitigate the cost shift from NEM customers to non-NEM customers.[47] However, the revised NEM Tariffs essentially eliminate the embedded cost shift and reduce the marginal cost shift. In addition, utility ownership of RECs would result in an embedded cost shift reduction of over 100% in both DEP and DEC, indicating that on an embedded cost basis, NEM customers would be subsidizing non-NEM customers.

57. Given the reduction in cross subsidies as a result of the NEM Tariffs, the Public Staff believes requiring utility ownership of all RECs is no longer necessary. Solar RECs from NEM customers do not provide significant value to the Company, as the REC value was not included in Duke's embedded or marginal cost studies; furthermore, a significant quantity of zero cost solar RECs has been recently procured through the Competitive Procurement of Renewable Energy (CPRE) Program. However, as a small marginal cost shift still does exist, all ratepayers would benefit from the Company using zero cost RECs from NEM

[46] Through discovery, Duke has indicated this language is incorrect, and that the language should state that RECs associated with all customer-sited generation, whether it is consumed on site or exported to the grid, shall be retained by the utility.

[47] See Joint Response of Progress Energy Carolinas, Inc., Duke Power, and Dominion North Carolina Power, filed February 3, 2006 at 12; January 18, 2008, DEC Initial Comments, at 4; and August 29, 2008 Direct Testimony of Christopher M. Fallon at page 4, line 19; all filed in in Docket No. E-100 Sub 83.

customers to meet REPS compliance. At the same time, ratepayers should be allowed to own attributes of the energy they generate from capital investments they have made in their property. To balance these competing factors, the Public Staff proposes an opt-out provision from utility REC ownership. If a NEM customer expresses a desire to own the customer's RECs, Duke should provide a pathway for customers to retain REC ownership through an affirmative opt-out process. While solar RECs may not have significant value today, in a future carbon constrained scenario where solar RECs appreciably gain value, it would be appropriate to provide a pathway for motivated ratepayers to retain these RECs. NEM customers could sell their RECs into voluntary REC markets, such as PJM's Generation Attribute Tracking System (GATS) or to REC aggregators; or, they may decide not to do anything with their RECs.

58. The Public Staff, therefore, recommends that the Commission require Duke to refile its NEM Tariffs with two changes. First, the Rider RSC language should be revised so that for those customers that do not opt out, the utility retains all RECs produced, not only RECs associated with energy delivered to the grid.[48] This would reduce administrative complexities related to the process by which Duke estimates the amount of RECs generated from NEM customers for REPS compliance. Second, Rider RSC should be revised to add an option for customers to opt out of utility REC ownership. Duke will not be able to use the RECs of customers who opt out of utility REC ownership for REPS compliance.

[48] This opt-out option should only be available to customers on Rider RSC. Customers on Rider NM are not eligible for the opt-out.

Whether or not a customer opts out should have no effect on other aspects of the NEM Tariffs.

59. The Public Staff also requests that Duke maintain records on customers requesting to opt out, so that the Public Staff can audit Duke's REPS cost recovery proceedings to ensure RECs from NEM customers who opt out are not double counted for Duke's REPS compliance. Duke should also report the number of customers who have opted out in each annual REPS rider proceeding.

60. The Public Staff is concerned that the NEM Tariffs, as filed, do not consider how energy storage might be adopted, installed, and dispatched by NEM customers over the next decade. As previously discussed, the provision prohibiting CPP exports from reducing CPP imports would have the effect of discouraging the addition of energy storage to NEM facilities. The Public Staff recommends that the Commission direct Duke to study and consider how the NEM Tariffs might be modified, in this docket or in the near future, to better facilitate and accommodate energy storage coupled with renewable generation. This analysis should include assurance that the projected reductions to cost cross-subsidies are maintained even if significant quantities of behind the meter energy storage are installed at NEM facilities, and that customers with NEM storage are adequately compensated for the value they provide to the grid. Other issues that should be studied within an energy storage docket should include whether a customer can retroactively add storage to an existing NEM system, if an energy storage device could benefit the distribution system by charging during the discount or off-peak periods and

discharging during the on-peak or CPP periods, if utility control of customer storage could provide system benefits, and how electric vehicle batteries could be incorporated into a storage paradigm if manufacturer standards reach commercial viability.

61. Duke proposes to recover the NEEC paid to NEM customers in its annual fuel rider adjustment proceedings. Duke refers to Part IV of HB 589, which added N.C.G.S. § 62-133.2(a1)(11), allowing cost recovery through the fuel rider of the total delivered costs associated with all purchases of electric power from qualifying small power production facilities, as defined in 16 U.S.C. § 796. The Public Staff recommends that the Commission find that NEM generation facilities meet these qualifications and are considered Qualifying Facilities under PURPA for purposes of fuel cost recovery.

62. The Public Staff believes it is appropriate that the NEM policies, tariffs, and rates be periodically revisited to ensure continued fairness to all customers and compliance with applicable statutes. While the Public Staff believes Duke's proposal is reasonable based on the current facts and circumstances, as NEM advances under the proposed Rider RSC, carbon plans take shape, avoided cost inputs change, general rate cases and multi-year rate plans are approved, and the unknown impact of behind-the-meter storage becomes more prevalent, many of the inputs used in the analysis may become outdated and will need to be revisited to ensure that NEM remains just, reasonable, and fair to all parties.

63. The Public Staff recommends that the Commission approve Duke's proposed NEM tariffs for a period of four years. Six months prior to expiration, Duke should make a filing to continue NEM and to make any modifications to its NEM tariffs as appropriate to address any statutory or regulatory changes that may occur. The Public Staff does not recommend that this review of NEM Tariffs eliminate the updating of inputs that may arise from other proceedings such as biennial avoided cost cases or general rate cases. Inputs should be updated annually as appropriate. If the Commission determines revisions are necessary, Duke should allow customers who take service under the revised NEM Tariffs to keep their contracts for a period of 10 years, and any changes resulting to the structure of the NEM Tariffs would apply to subsequent contract periods.

64. In order to assess the ongoing performance and administration of NEM Tariffs, the Public Staff believes it is appropriate to require Duke to file annual reports on the implementation of its revised NEM program and tariffs. As with our recommendation on revisiting the NEM Tariffs, the Public Staff would like to coordinate with Duke and other interested parties to determine the format and content of the annual report. As a start, the Public Staff proposes that the content include:

a. Number of customers remaining on Rider NM and those enrolling or transferring into Rider RSC;
b. The amount of enrolled NEM load under both Riders NM and RSC and a comparison to NEM projections used in Duke's Integrated Resource Plans;
c. The average kW capacity per customer;

d. The number of customers and the capacity of any storage technologies deployed;
e. A updated marginal and embedded cost of service study for NEM in the same manner as presented with the Application;
f. The number of RECs received by the Companies and the number retained by NEM customers;
g. An assessment of interconnection costs and related issues that, including costs of any upgrades assigned to NEM customers, any costs incurred by the Companies to resolve any load conditions, require network or other upgrades to distribution facilities;
h. A load analysis or summary of imports and exports over each TOU-CPP period.

65. Finally, the Public Staff notes that the Applications do not address the proposed incentives outlined in Exhibit B to the MOU. The Public Staff will address those incentives on an individual basis as each proposed incentive is filed with the Commission.

Public Staff Recommendations

66. In conclusion, the Public Staff recommends that the Commission do the following regarding the Application and Duke's NEM Tariffs:

a. direct Duke to publish an online savings calculator for potential NEM customers by January 1, 2023;
b. direct Duke to refile the NEM Tariffs to reflect the Public Staff's recommendations regarding CPP netting and REC ownership and opt-out provisions;
c. approve the Companies' proposed treatment of Legacy NEM Customers;

d. direct Duke to maintain records on all NEM customers who opt out of utility REC ownership, and include information regarding this opt out provision in future REPS cost recovery proceedings;
e. direct Duke to study and consider how the NEM Tariffs might be modified, in this docket or in the near future, to better facilitate and accommodate energy storage coupled with renewable geneSASration;
f. make a determination that NEM facilities are Qualified Facilities under PURPA;
g. establish a mechanism to revisit the NEM Tariffs after four years; and
h. direct Duke to file annual NEM reports.

Respectfully submitted this the 29th day of March, 2022.

PUBLIC STAFF
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CERTIFICATE OF SERVICE

I certify that a copy of this Initial Comments of the Public Staff has been served on all parties of record or their attorneys, or both, in accordance with Commission Rule R1-39, by United States Mail, first class or better; by hand delivery; or by means of facsimile or electronic delivery upon agreement of the receiving party.

This the 29th day of March, 2022.

Electronically submitted
/s/Robert B. Josey
Staff Attorney

Embedded Cost Study Results

DEP		RES		RES Proposal
Non-Net Metering Annual Cost-of-Service [1]	$	1,860.44	$	1,860.44
Net Metering Annual Cost-of-Service [2]	$	1,143.58	$	1,143.58
Value of Exports	$	29.76	$	100.09
Cost-of-Service Reduction from Solar	$	746.63	$	816.96
Revenue Reduction [3]	$	1,177.93	$	839.28
Annual Solar Cross-Subsidy [4]	$	431.30	$	22.32
Monthly Solar Cross-Subsidy [4]	$	35.94	$	1.86
Reduction in Solar Cross-Subsidy				95%

DEC		RS		RE		RS Proposal		RE Proposal
Non-Net Metering Annual Cost-of-Service [1]	$	1,460.17	$	1,577.98	$	1,460.17	$	1,577.98
Net Metering Annual Cost-of-Service [2]	$	847.06	$	931.13	$	847.06	$	931.13
Value of Exports	$	19.83	$	19.94	$	66.67	$	67.07
Cost-of-Service Reduction from Solar	$	632.94	$	666.80	$	679.78	$	713.93
Revenue Reduction [3]	$	941.70	$	1,028.64	$	680.91	$	700.04
Annual Solar Cross-Subsidy [4]	$	308.76	$	361.84	$	1.13	$	(13.89)
Monthly Solar Cross-Subsidy [4]	$	25.73	$	30.15	$	0.09	$	(1.16)
Reduction in Cross-Subsidy						100%		104%
		Current RS & RE Weighted Average				Proposal RS & RE Weighted Average		
Weighted Solar Cross-Subsidy (DEC)	$			27.59	$			(0.43)
Weighted Reduction in Solar Cross-Subsidy (DEC)						102%		

Assumptions		RS		RE		Proposal
Percent of Population (DEC)		58%		42%		
Rider Adjustments						
DEC	$	(0.003509)				
DEP	$	0.006550				
		Current NEM Policy		Proposal		
Annual Excess Exports kWh [5]		860		2,892		

Unit Costs [6]		E-2 Sub 1219		E-7, Sub 1214		
	unit	DEP		DEC - RS		DEC - RE
P&T Demand	$/kW-Month	$	15.54	$	15.66	$ 16.29
D Demand	$/kW-Month	$	1.50	$	2.03	$ 2.07
Energy	$/kWh	$	0.0346	$	0.0231	$ 0.0232
Customer	$/Month	$	27.64	$	21.96	$ 22.84

Notes

[1] All-in CoS for Customers before solar. Equals costs calculated in Calculations tab plus rider adjustments.
[2] All-in CoS for Customers after solar. Equals costs calculated in Calculations tab plus rider adjustments.
[3] Calculated from SAS model, used 2018 data set to match CoS test year, current rates
[4] Positive number = solar putting upward pressure on rates for other customers, negative number = solar putting downward pressure on rates for other customers
[5] Annual kWh not netted due to netting conventions
[6] From most recently approved Cost of Service study, used to calculate Cost of Service Reduction from Solar

DEC RS

No Solar

Month	Energy	D Demand	P&T Demand	Customer	Total COS
1	$ 30.16	$ 12.98	$ 62.61	$ 21.96	$ 127.71
2	$ 19.05	$ 12.98	$ 62.61	$ 21.96	$ 116.60
3	$ 20.86	$ 12.98	$ 62.61	$ 21.96	$ 118.41
4	$ 17.47	$ 12.98	$ 62.61	$ 21.96	$ 115.02
5	$ 28.27	$ 12.98	$ 62.61	$ 21.96	$ 125.82
6	$ 38.91	$ 12.98	$ 62.61	$ 21.96	$ 136.47
7	$ 40.25	$ 12.98	$ 62.61	$ 21.96	$ 137.80
8	$ 39.03	$ 12.98	$ 62.61	$ 21.96	$ 136.58
9	$ 35.45	$ 12.98	$ 62.61	$ 21.96	$ 133.01
10	$ 23.61	$ 12.98	$ 62.61	$ 21.96	$ 121.16
11	$ 22.07	$ 12.98	$ 62.61	$ 21.96	$ 119.62
12	$ 26.42	$ 12.98	$ 62.61	$ 21.96	$ 123.97
Annual Total	**$ 341.54**	**$ 155.77**	**$ 751.34**	**$ 263.51**	**$ 1,512.16**

	Energy	D Demand	P&T Demand	Customer	Total COS
CoS Savings	$ 105.47	$ 9.71	$ 513.98	$ -	$ 629.17
% Savings	31%	6%	68%	0%	41.6%

Net Metering

Month	Energy	D Demand	P&T Demand	Customer	Total COS
1	$ 24.06	$ 12.17	$ 19.78	$ 21.96	$ 77.97
2	$ 14.72	$ 12.17	$ 19.78	$ 21.96	$ 68.63
3	$ 14.83	$ 12.17	$ 19.78	$ 21.96	$ 68.74
4	$ 11.29	$ 12.17	$ 19.78	$ 21.96	$ 65.20
5	$ 17.70	$ 12.17	$ 19.78	$ 21.96	$ 71.61
6	$ 23.31	$ 12.17	$ 19.78	$ 21.96	$ 77.22
7	$ 25.41	$ 12.17	$ 19.78	$ 21.96	$ 79.32
8	$ 24.63	$ 12.17	$ 19.78	$ 21.96	$ 78.54
9	$ 24.18	$ 12.17	$ 19.78	$ 21.96	$ 78.09
10	$ 16.49	$ 12.17	$ 19.78	$ 21.96	$ 70.41
11	$ 17.31	$ 12.17	$ 19.78	$ 21.96	$ 71.22
12	$ 22.14	$ 12.17	$ 19.78	$ 21.96	$ 76.05
Annual Total	**$ 236.06**	**$ 146.06**	**$ 237.35**	**$ 263.51**	**$ 882.99**

DEC RE

No Solar

Month	Energy	D Demand	P&T Demand	Customer	Total COS
1	$ 58.39	$ 19.26	$ 58.78	$ 22.84	$ 159.26
2	$ 29.38	$ 19.26	$ 58.78	$ 22.84	$ 130.25
3	$ 33.67	$ 19.26	$ 58.78	$ 22.84	$ 134.54
4	$ 23.46	$ 19.26	$ 58.78	$ 22.84	$ 124.33
5	$ 29.74	$ 19.26	$ 58.78	$ 22.84	$ 130.61
6	$ 37.70	$ 19.26	$ 58.78	$ 22.84	$ 138.57
7	$ 39.15	$ 19.26	$ 58.78	$ 22.84	$ 140.02
8	$ 38.35	$ 19.26	$ 58.78	$ 22.84	$ 139.23
9	$ 35.36	$ 19.26	$ 58.78	$ 22.84	$ 136.23
10	$ 27.22	$ 19.26	$ 58.78	$ 22.84	$ 128.10
11	$ 35.62	$ 19.26	$ 58.78	$ 22.84	$ 136.50
12	$ 45.00	$ 19.26	$ 58.78	$ 22.84	$ 145.87
Annual Total	**$ 433.05**	**$ 231.12**	**$ 705.30**	**$ 274.04**	**$ 1,643.51**

	Energy	D Demand	P&T Demand	Customer	Total COS
CoS Savings	$ 122.53	$ 12.87	$ 530.00	$ -	$ 665.40
% Savings	28%	6%	75%	0%	40.5%

Net Metering

Month	Energy	D Demand	P&T Demand	Customer	Total COS
1	$ 49.32	$ 18.19	$ 14.61	$ 22.84	$ 104.95
2	$ 23.71	$ 18.19	$ 14.61	$ 22.84	$ 79.34
3	$ 25.15	$ 18.19	$ 14.61	$ 22.84	$ 80.78
4	$ 15.54	$ 18.19	$ 14.61	$ 22.84	$ 71.17
5	$ 18.05	$ 18.19	$ 14.61	$ 22.84	$ 73.68
6	$ 21.30	$ 18.19	$ 14.61	$ 22.84	$ 76.93
7	$ 23.36	$ 18.19	$ 14.61	$ 22.84	$ 79.00
8	$ 23.01	$ 18.19	$ 14.61	$ 22.84	$ 78.64
9	$ 23.16	$ 18.19	$ 14.61	$ 22.84	$ 78.79
10	$ 19.17	$ 18.19	$ 14.61	$ 22.84	$ 74.80
11	$ 29.37	$ 18.19	$ 14.61	$ 22.84	$ 85.01
12	$ 39.39	$ 18.19	$ 14.61	$ 22.84	$ 95.02
Annual Total	**$ 310.53**	**$ 218.25**	**$ 175.30**	**$ 274.04**	**$ 978.11**

DEP

No Solar

Month	Energy	D Demand	P&T Deman	Customer	Total COS
1	$ 62.86	$ 11.43	$ 59.59	$ 27.64	$ 161.52
2	$ 35.00	$ 11.43	$ 59.59	$ 27.64	$ 133.66
3	$ 39.27	$ 11.43	$ 59.59	$ 27.64	$ 137.93
4	$ 29.92	$ 11.43	$ 59.59	$ 27.64	$ 128.58
5	$ 43.25	$ 11.43	$ 59.59	$ 27.64	$ 141.92
6	$ 57.52	$ 11.43	$ 59.59	$ 27.64	$ 156.18
7	$ 59.59	$ 11.43	$ 59.59	$ 27.64	$ 158.25
8	$ 58.03	$ 11.43	$ 59.59	$ 27.64	$ 156.69
9	$ 53.03	$ 11.43	$ 59.59	$ 27.64	$ 151.70
10	$ 37.63	$ 11.43	$ 59.59	$ 27.64	$ 136.29
11	$ 41.55	$ 11.43	$ 59.59	$ 27.64	$ 140.21
12	$ 51.21	$ 11.43	$ 59.59	$ 27.64	$ 149.87
Annual Total	**$ 568.85**	**$ 137.18**	**$ 715.08**	**$ 331.68**	**$ 1,752.79**

	Energy	D Demand	P&T Deman	Customer	Total COS
CoS Savings	$ 168.64	$ 8.08	$ 508.22	$ -	$ 684.95
% Savings	30%	6%	71%	0%	39.1%

Net Metering

Month	Energy	D Demand	P&T Deman	Customer	Total COS
1	$ 51.86	$ 10.76	$ 17.24	$ 27.64	$ 107.50
2	$ 27.68	$ 10.76	$ 17.24	$ 27.64	$ 83.31
3	$ 28.67	$ 10.76	$ 17.24	$ 27.64	$ 84.31
4	$ 19.57	$ 10.76	$ 17.24	$ 27.64	$ 75.21
5	$ 26.73	$ 10.76	$ 17.24	$ 27.64	$ 82.36
6	$ 33.65	$ 10.76	$ 17.24	$ 27.64	$ 89.29
7	$ 36.78	$ 10.76	$ 17.24	$ 27.64	$ 92.41
8	$ 35.87	$ 10.76	$ 17.24	$ 27.64	$ 91.50
9	$ 35.57	$ 10.76	$ 17.24	$ 27.64	$ 91.21
10	$ 26.38	$ 10.76	$ 17.24	$ 27.64	$ 82.01
11	$ 33.48	$ 10.76	$ 17.24	$ 27.64	$ 89.12
12	$ 43.97	$ 10.76	$ 17.24	$ 27.64	$ 99.61
Annual Total	**$ 400.20**	**$ 129.10**	**$ 206.86**	**$ 331.68**	**$ 1,067.84**

DEC

RS

Month	Sum of Exports [2]	Sum of Imports[3]	Gross Load[4]	Solar Production[5]
1	458	1,044	1,308	723
2	384	638	826	572
3	754	643	905	1,016
4	896	490	758	1,164
5	713	768	1,226	1,171
6	606	1,011	1,688	1,283
7	535	1,102	1,746	1,178
8	533	1,068	1,693	1,157
9	380	1,049	1,538	869
10	551	716	1,024	860
11	373	751	957	578
12	259	960	1,146	445
Total	6,441	10,240	14,816	11,015

Non-Coincident Peaks

Description	RS	RE	RES
No Solar	6.40	9.31	7.62
Solar	6.00	8.79	7.17

Coicident Peaks [1]

6/19/18 HE 5pm

	RS	RE	RES
No Solar	4.00	3.61	3.83
Solar	1.26	0.90	1.11

RE

Month	Sum of Exports	Sum of Imports	Gross Load (kWh)	Solar Production
1	401	2,127	2,518	792
2	405	1,022	1,267	649
3	804	1,084	1,452	1,172
4	1,029	670	1,012	1,371
5	872	778	1,282	1,376
6	813	918	1,626	1,520
7	712	1,007	1,688	1,393
8	706	992	1,654	1,368
9	493	999	1,525	1,019
10	641	826	1,174	989
11	383	1,267	1,536	651
12	252	1,698	1,940	494
Total	7,512	13,390	18,673	12,794

DEP

Month	Sum of Exports	Sum of Imports	Gross Load	Solar Production
1	434	1,498	1,816	752
2	393	800	1,011	604
3	775	828	1,135	1,081
4	952	565	864	1,251
5	780	772	1,250	1,257
6	693	972	1,662	1,382
7	609	1,063	1,722	1,268
8	605	1,036	1,677	1,246
9	428	1,028	1,532	932
10	589	762	1,087	914
11	377	967	1,200	609
12	256	1,270	1,480	466
Total	6,891	11,563	16,436	11,762

Notes

[1] Data was from DEC customers, therefore, the DEC peak was used to determine the CP
[2] Energy exported to the grid (i.e. energy provided to the utility's system)
[3] Energy imported from the grid (i.e. energy provided to NEM customer from the system)
[4] Total customer load. For NEM customer equal imports plus solar production that stays behind the meter. Would be imports if solar did not exist.
[5] Total solar production

Marginal Cost Study - Summary Results

		Monthly Upward Pressure on Rates
DEP		
Current	$	59.02
Proposal	$	29.85
Percent Reduction - Marginal		49%
DEC		
RS Current	$	31.02
RS Proposal	$	8.85
RE Current	$	30.28
RE Proposal	$	3.88
Weighted Average Marginal Cost	$	30.69
Weighted Average Settlement Marginal	$	6.61
Percent Reduction - Marginal		78%

Marginal Cost Study - DEC-RE Results

	2022 DEC-NC RE System Benefits			
	Total Solar Gen	Solar Self-Service	Solar Exports	Notes
Annual kWh Savings	**13,054**	**12,567**	**487**	kWh comprised by self-service (consumed behind the meter) or exported on a monthly basis.
Avoided Electric Production	$382	$373	$9	Includes Fuel + O&M to produce kWh
Avoided Electric Capacity	$33	$28	$5	New Plant
Avoided Electric T&D	$247	$206	$41	New Transmission and Distribution
Total Benefits	**$662**	**$606**	**$56**	

Note: Avoided costs use prevailing values from DSM/EE mechanism

	Current	Proposal	
Total Benefits	**$662**	**$662**	
Revenue Reduction	$1,025	$708	Equal to estimated NEM Customer savings
Monthly Cross-Subsidy	$30	$4	

87% Percent Reduction

Marginal Cost Study - DEC-RS Results

	2022 DEC-NC RS System Benefits			
	Total Solar Gen	Solar Self-Service	Solar Exports	Notes
Annual kWh Savings	**10,760**	**10,327**	**434**	kWh comprised by self-service (consumed behind the meter) or exported on a monthly basis.
Avoided Electric Production	$315	$306	$8	Includes Fuel + O&M to produce kWh
Avoided Electric Capacity	$26	$25	$1	New Plant
Avoided Electric T&D	$196	$190	$6	New Transmission and Distribution
Total Benefits	**$537**	**$521**	**$16**	

Note: Avoided costs use prevailing values from DSM/EE mechanism

	Current	Proposal	
Total Benefits	**$537**	**$537**	
Revenue Reduction	$909	$643	Equal to estimated NEM Customer savings
Monthly Cross-Subsidy	$31	$9	

71% Percent Reduction

Marginal Cost Study - DEP-RE/RS Wtd Avg Results

	2022 DEP-NC RE-RS Wtd Avg System Benefits			
	Total Solar Gen	Solar Self-Service	Solar Exports	Notes
Annual kWh Savings	**11,724**	**11,371**	**353**	kWh comprised by self-service (consumed behind the meter) or exported on a monthly basis.
Avoided Electric Production	$334	$331	$3	Includes Fuel + O&M to produce kWh
Avoided Electric Capacity	$2	$2	$0	New Plant
Avoided Electric T&D	$127	$118	$9	New Transmission and Distribution
Total Benefits	**$463**	**$451**	**$12**	

Note: Avoided costs use prevailing values from DSM/EE mechanism

	Current	Proposal	
Total Benefits	**$463**	**$463**	
Revenue Reduction	$1,171	$821	Equal to estimated NEM Customer savings
Monthly Cross-Subsidy	$59	$30	
		49%	Percent Reduction