

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. E-2, SUB 927
DOCKET NO. E-2, SUB 1287
DOCKET NO. E-7, SUB 1032
DOCKET NO. E-7, SUB 1261

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-2, SUB 927

In the Matter of)
Application by Duke Energy Progress, LLC,)
for Modification of Residential Service Load)
Control Program)

DOCKET NO. E-2, SUB 1287

In the Matter of)
Application by Duke Energy Progress, LLC,)
for Approval of PowerPairSM Solar and Battery)
Installation Pilot Program Pursuant to Order of)
the North Carolina Utilities Commission)

DOCKET NO. E-7, SUB 1032

In the Matter of)
Application by Duke Energy Carolinas, LLC,)
for Modification of Residential Service Power)
Manager Load Control Program)

DOCKET NO. E-7, SUB 1261

In the Matter of)
Application by Duke Energy Carolinas, LLC,)
for Approval of PowerPairSM Solar and Battery)
Installation Pilot Program Pursuant to Order)
of the North Carolina Utilities Commission)

ORDER APPROVING
POWERPAIR PILOT PROGRAM,
WITH CONDITIONS, AND
APPROVING MODIFICATIONS
TO ENERGYWISE AND POWER
MANAGER RESIDENTIAL LOAD
CONTROL PROGRAMS

BY THE COMMISSION: On March 23, 2023, the Commission issued an Order Declining to Approve Proposed Smart Saver Solar Program and Requiring Development of Pilot Program (Smart Saver Order), in Docket Nos. E-2, Sub 1287 and E-7, Sub 1261 (Smart Saver Dockets). In summary, the Smart Saver Order denied the applications of Duke Energy Progress, LLC (DEP), and Duke Energy Carolinas, LLC (DEC, collectively Duke or Companies), for approval of their proposed Smart Saver Solar Energy Efficiency Program and required DEP and DEC to file a proposed pilot program pairing solar generation with energy storage.

On June 21, 2023, DEP and DEC filed their proposed PowerPairSM Solar and Battery Installation Pilot Program (PowerPair), requesting that the Commission approve it with an effective date no earlier than 120 days following Commission approval. Duke stated that the pilot program was being filed in compliance with the Commission's Smart \$aver Order.

Also on June 21, 2023, DEP and DEC filed motions for the approval of modifications to their residential load control programs, EnergyWise and Power Manager, respectively (collectively, DSM Program Modifications), in Docket Nos. E-2, Sub 927 and E-7, Sub 1032 (Load Control Dockets). DEP and DEC explained that the proposed DSM Program Modifications are intended to complement and enable the energy storage component of their PowerPair proposal.

On June 29, 2023, the Commission issued an Order Requesting Comments on Duke's proposed PowerPair Program. The Order required that comments be filed in the Smart \$aver Dockets on or before August 7, 2023, and that reply comments be filed on or before August 28, 2023.

On July 14, 2023, in response to a motion by the Public Staff, the Commission issued an Order concluding that there were efficiencies to be gained by aligning the filing of interventions, comments and reply comments on PowerPair with those on the DSM Program Modifications. As a result, the Commission ordered that interested persons should file petitions to intervene and initial comments on or before August 21, 2023, and that all parties should file reply comments on or before September 11, 2023.

Description of PowerPair

According to Duke, the PowerPair Pilot Program would serve three main purposes: (1) to incentivize eligible residential homeowners to install solar panels and a battery storage system, resulting in support for reductions in carbon emissions, (2) to analyze the operational impacts of residential solar and energy storage on the electric system, and (3) to assess the cost effectiveness of investments in solar plus storage and the extent to which such investments play a role in meeting carbon reduction requirements. Duke stated that these objectives would ensure that PowerPair participants and non-participants benefit from making new energy efficiency measures affordable.

Duke further stated that PowerPair would be available to residential customers who install new solar panels and a battery storage system (installed equipment). Moreover, Duke explained that the customer must own the premises on which the installed equipment is located, and the customer's battery must comply with interconnection standards and maintain internet connectivity to allow Duke to track usage data. However, participants could own or lease the installed equipment. Participants would receive monetary incentives from Duke to offset the cost of installed equipment, as follows:

Solar incentive – \$0.36/watt for solar panels, limited to a maximum installed capacity of 10kW, and capped at \$3,600.00 per residence.

Battery incentive - \$240/kWh for battery storage, limited to a maximum installed capacity of 13.5 kWh. As Duke noted, the Smart Saver Order stated that the solar incentive should be limited to solar panels having a maximum installed capacity of 10 kW and suggested that there be a “similar maximum” for the PowerPair battery incentive. Duke proposed the maximum installed capacity of 13.5 kWh for the battery incentive because that capacity represents the standard installed battery capacity that consumers utilize in conjunction with solar panels having an installed capacity of 10 kW.

Further, Duke explained that the maximum kilowatt export to the grid from the customer’s energy system, including, but not limited to, the installed equipment, could not exceed 20 kW at any time.

Consistent with the directives of the Smart Saver Order, PowerPair participants would be required to select net energy metering (NEM), as their electric tariff. The participants would be divided into two cohorts, with each cohort composed of 50% of the total participants, as follows:

Cohort A - Participants would be served under the time-of-use (TOU) rates approved by the Commission in the NEM Order and would have complete control of the use of the energy storage device.

Cohort B - Participants would be served under the Bridge Rate approved by the Commission in the NEM Order and the Companies, or a third party, would have control over the battery storage device. Further, Cohort B participants would be required to participate in a new demand response program called Battery Control, a new measure within the modified EnergyWise and Power Manager programs. Under Battery Control the customer's battery could be controlled by Duke up to 18 times per winter season (during the months of December through March); up to 9 times per summer season (during the months of May through September); and up to 9 times in the remaining months (collectively referred to as Control Events). A Control Event is defined as the initiation of a signal to control the battery and, within 48 hours later, a discharging of the battery by the Company. The Company would not discharge the battery below a 20% state of charge, but would reserve the right to call interruptions outside of the above parameters in the event that the utility’s continuity of service was in jeopardy. Cohort B participants would receive an additional monetary incentive of \$6.50/kW per month, adjusted by a 56.7% battery capability factor per month (battery control incentive). Based on a 10-kW battery system, the typical monthly battery control incentive would be approximately \$37, or \$442 per year.

Customers would be allowed to switch cohorts after the completion of 12 months in their original cohort, subject to availability. According to Duke, this feature would make the pilot program more attractive because it would provide the flexibility needed to meet customers’ changing needs.

As Duke acknowledges, the Smart \$aver Order directed that the pilot program be offered only to all-electric residential customers and to customers who use electricity for all purposes other than cooking. Nevertheless, Duke proposes to allow customers with natural gas heating to participate in PowerPair. Duke stated that the natural gas heating exception was suggested by stakeholders involved in the PowerPair discussions. Further, Duke maintained that the Company's proposed Smart \$aver Program included an electric heat limitation only because that program required installation and use of an electrical smart thermostat, whereas PowerPair would not involve any similar requirement. In addition, Duke contended that an electrical heat limitation would inappropriately restrict the participant pool and thus the research data obtained from PowerPair.

Duke stated that the installed equipment, assuming solar panels of 10 kW and a battery of 13.5 kWh, would cost an estimated \$30,000. Duke provided calculations showing that the cost would likely be almost halved by the value of the PowerPair incentives and the Inflation Reduction Act (IRA) tax credit, subject to certain assumptions noted by Duke.

PowerPair would be open to enrollment of participants for three years. Duke noted that the Smart \$aver Order provided that the proposed program should be limited to a maximum annual level of 10,000 kW of solar generation for each Company's participants. Smart \$aver Order, at 7. However, Duke stated that stakeholders recommended that the program not include a yearly limitation but, instead, have a total duration cap of 30,000 kW of capacity for each Company's participants in order to avoid stops and starts in the market and more quickly boost and expand participation. Duke stated that it agrees with this stakeholder recommendation.

With regard to a similar maximum program cap for battery capacity, the Companies recommended that the individual battery capacity of 13.5 kWh would be sufficient when coupled with the program limit of 30,000 kW of solar capacity for each Company's participants. Further, if applications exceed the participation limit the Company will enter the applications into a random selection process using analytical software that will assign each application a place in line. Applications that do not make it within the 30,000 kW cap will be placed on a waiting list in first come, first served order.

As directed in the Smart \$aver Order, participants would be required to participate in the program for at least ten years and there would be an early termination charge, unless the termination is for good cause, such as a circumstance beyond the control of the participant. The early termination charge would be equal to one minus the number of months since initial participation divided by 120 multiplied by the applicable PowerPair incentive.

Duke would require participants to allow it to use each participant's operating data to study the impacts of residential solar paired with energy storage, the cost effectiveness of achieving such impacts, and the accessibility of solar plus storage to different residential customer demographics. To the extent feasible, Duke would gather information such as participant home ownership, urban/rural location, and, for Cohort B participants, pre-pilot and post-pilot electricity usage. Duke noted that stakeholders requested that Duke gather more detailed demographic information, such as income, age, gender, and race or ethnicity.

However, Duke opposed the gathering of such in depth information because it considers such questioning to be overly invasive of its customers' privacy.

Duke would file annual status reports that include pilot data and information, and a final report that includes robust discussion and analysis of the data and information gathered during the duration of the pilot.

Consistent with the Smart \$aver Order, DEP and DEC would recover their PowerPair administrative costs and incentives by amortizing the total program incentives during a calendar year and administrative costs over a 20-year period, including a return component adjusted for income taxes at the utility's overall weighted average cost of capital established in its most recent general rate case. The amortized costs would be recovered through each Company's annual REPS rider, pursuant to N. C. Gen. Stat. § 62-133.8(h).

Each Company attached its proposed PowerPair tariff as Exhibit 1 and its proposed program Terms and Conditions as Exhibit 2.

In conclusion, Duke summarized the four aspects in which its proposal differs from the parameters included in the Smart \$aver Order.

1. Limiting the battery incentive payment to a maximum installed capacity of 13.5 kWh;
2. Requiring Cohort B participants to join the modified EnergyWise/Power Manager Battery Control option;
3. Allowing PowerPair to be available to customers with electric or gas heating systems; and
4. Allowing the Company to immediately open the program to a maximum of 30,000 kW of solar generation, rather than an annual 10,000 kW limit.

Duke contended that these changes are reasonable and that Commission approval of the changes would complement the objectives of the Smart \$aver Order by enabling the Company to have control over the energy storage systems of Cohort B participants, and by expanding the scope of potential participants and research results gleaned from PowerPair.

Description of DSM Program Modifications

DEP's EnergyWise Residential Load Control Program was approved by the Commission as a new demand-side management (DSM) program on October 14, 2008, in Docket No. E-2, Sub 927. DEC's Power Manager Residential Load Control Program was approved by the Commission as a new DSM program on February 26, 2009, in Docket No. E-7, Sub 831.

The basic elements of EnergyWise and Power Manager are essentially identical. Residential customers voluntarily agree to allow Duke to exercise remote control options over

their heating, ventilation, and air conditioning (HVAC) systems and water heaters. The remote control device is either provided by the utility or a smart thermostat owned by the customer. Participants receive financial incentives in exchange for allowing Duke to interrupt or adjust service to the participants' HVAC systems and water heaters. Generally, the utility will make brief adjustments to the customer's thermostat temperatures or reduce the run time of their HVAC units and water heaters during peak electric demand periods.

The proposed DSM Program Modifications are in response to the Smart \$aver Order directive requiring Duke to include in the PowerPair Program one cohort of participants — identified by Duke in PowerPair as Cohort B — in which the participants are required to cede control over their energy storage device to Duke. The DSM Program Modifications would create a new measure within EnergyWise and Power Manager called Battery Control. Participation in Battery Control would be required of Cohort B participants, and also available to other Duke customers who are willing to allow Duke to exercise control over their battery systems during Control Events. According to Duke, Battery Control would allow Duke to evaluate the demand reduction impacts of PowerPair, including: (1) estimation of the average kW and aggregate MW dispatch capabilities that are achieved during Control Events and the overall average for events; (2) dispatch impacts under different event conditions; and (3) the effectiveness of Battery Control design and processes. In exchange for granting Duke control over their battery storage system, customers would receive from Duke the monthly battery control incentive discussed above.

The results of the cost/benefit tests for Battery Control are:

	UCT	TRC	RIM
Power Manager	1.70	4.64	1.70
EnergyWise	1.55	4.27	1.55

Each Company attached its proposed revised DSM tariff as Attachment G to its application.

Comments

Comments were filed by the Public Staff, the North Carolina Attorney General's Office (AGO), Solar Energy Industries Association (SEIA), and jointly by Southern Alliance for Clean Energy, North Carolina Sustainable Energy Association, and Vote Solar (SACE, et al.). Below is a summary of the parties' comments.

Public Staff

The Public Staff stated that it supports Duke's proposed PowerPair Pilot Program as outlined in the application, including the four changes made by Duke that differ from the directives in the Smart \$aver Order. However, the Public Staff made several recommendations that it contended would further enhance PowerPair.

Participant Requirements

The Public Staff recommends that participants be required to remain in their initial cohort for a minimum of three years before switching to another cohort. The Public Staff also recommends that, for the initial three-year period, customers in Cohort A should not be permitted to participate in a Battery Control Option. The Public Staff contended that this change would help ensure that research objectives are met, and would balance the research objective with Duke's goal of providing flexibility for its customers.

The Public Staff agreed with Duke's proposal that participants be allowed to lease the installed equipment but recommended that Duke consider requiring equipment ownership in long-term planning. It opined that paying upfront incentives for leased equipment may carry risks and, consequently, Duke should include in its final report separate statistics on the participation rates of equipment owners and equipment lessees.

Incentive Structure

The Public Staff discussed Duke's estimate of the cost of installed equipment,

\$30,000, and the reductions for PowerPair incentives and IRA tax credits, totaling about half of the installed equipment cost. The Public Staff disagreed with Duke's estimates and, instead, concluded that the installed equipment would cost about \$52,400. In addition, the Public Staff estimated that the proposed PowerPair incentives would cover about 13% of the installed equipment cost and the IRA tax credit would cover 30%.

To assess Duke's proposed battery incentive, the Public Staff examined similar energy storage programs in other states. It found that Duke's proposed battery incentive is lower than incentives offered in Connecticut, Vermont, and Colorado.

The Public Staff believes that Duke's estimate may not reflect realistic system costs and estimates the total system cost to be approximately \$52,600, which would diminish the impact of the proposed incentives on the overall cost to the customer. Therefore, the Public Staff concluded that Duke's proposed battery incentive is too small to effectively incentivize residential customers to site energy storage, and it recommended increasing the battery incentive to \$500/kWh. With Duke's proposed maximum storage capacity of 13.5 kWh, this would result in a maximum storage incentive of \$6,750. According to the Public Staff, this higher incentive would encourage participation because for a residential system with 10 kW of solar capacity and a 13.5 kWh battery, customers would receive about \$10,350, covering approximately 20% of the total estimated installed equipment cost. Finally, the Public Staff suggested that Duke consider offering different upfront incentives for Cohort A and B if participation in the pilot skews towards Cohort A.

Further, the Public Staff discussed Duke's proposed additional battery control incentive of \$6.50 per kW per month for Cohort B participants, to be adjusted based on a battery capability factor of 56.7%. The Public Staff contended that this incentive would undervalue the battery's capability contribution compared to similar programs in other states. It recommended increasing the battery capability factor from Duke's proposed 56.7% to

70.9%. The Public Staff stated that one of the inputs used by Duke to arrive at the 56.7% battery capacity factor¹ was a capacity available for dispatch factor of 80%. However, in discovery Duke conceded that the 80% capacity available for dispatch factor was not necessary. According to the Public Staff, removing this factor from the computation results in a revised battery capability factor of 70.9%, and Duke has agreed that the Companies will apply this revised battery capability factor as part of the battery control incentive.

In addition, the Public Staff recommended increasing the battery control incentive to \$10/kW per month. According to the Public Staff, the \$6.50/kW incentive is significantly less than Duke's avoided capacity and transmission and distribution (T&D) costs, which are based on rates and methodologies approved in the most recent avoided cost proceeding in Docket No. E-100, Sub 175, and on an avoided T&D study performed by Duke in 2021. Moreover, the Public Staff noted that Duke did not perform an analysis supporting its proposed monthly amount for the battery control incentive. In addition, rather than using the proposed battery capability factor, the Public Staff recommended that the monthly battery control incentive be based on the sum of the actual amount of power discharged from the battery during each Control Event during the month, as that information will be readily available to Duke through data collected from the third-party aggregator.

Solar Developer Educational Sessions

The Public Staff noted that Duke intends to hold quarterly educational sessions for installers on battery safety and permitting, with the costs of the educational sessions included in program administration costs, and that Duke estimated the cost to be \$5,600 for DEP and \$6,000 for DEC in the first year. The Public Staff stated that it supports these educational sessions as vital for achieving full enrollment and meeting research goals.

Cost of the PowerPair Pilot

The Public Staff cited Duke's estimate that the PowerPair pilot will cost approximately \$46.8 million, with incentives making up the majority of the expenses, that in accordance with the Smart Saver Order the administrative costs would be spread over 20 years, and that the administrative costs and incentives would be recovered through DEP's and DEC's annual REPS riders. The Public Staff requested that Duke provide an updated cost analysis based on the increased incentives recommended in the Public Staff's comments.

Battery Control Options

The Public Staff discussed Duke's plan to conduct up to 36 Control Events yearly, with the potential for more if needed for service reliability. Customers would be able to use their battery storage freely when no Control Event is in progress. A third-party aggregator would manage events and data collection. The Public Staff suggested revisions to the tariff's System Emergency Clause to clarify the meaning of "interruption," and to specify whether the participant can opt out of an emergency interruption in the same manner as the

¹ The battery capacity factor is the amount of battery capacity that will be available to Duke during a Control Event.

participant can opt out of a Control Event. The Public Staff therefore recommended that the System Emergency Clause be modified to state:

The Company reserves the right to prevent the Customer's Battery from charging from the grid if continuity of service is threatened, or to disconnect the customer's load entirely if the operation of the Customer's Battery threatens the reliability or safety of the Company's system. The Company's exercising of this right does not constitute a Control Event, and the Company will not discharge or charge the Customer's Battery during such an event.

According to the Public Staff, Duke plans to use Battery Control Options to access behind-the-meter resources for system capacity, thus obtaining maximum benefits from solar energy storage. Participants can charge batteries as they like outside of Control Events, but if the battery is charged from the grid during a Control Event the customer will be billed for all imported energy. During discovery, Duke noted that customers on a TOU or TOU-CPP rate schedule who import electricity during on-peak periods may experience higher than expected bills. Duke indicated that DEC and DEP would attempt to avoid having customers charging their batteries during peak periods, as they are attempting to shift load away from peak periods. However, the Public Staff opined that for some rate schedules there may be a disconnect between the residential on-peak period and the utility's highest cost periods. Of particular concern to the Public Staff is the very broad on-peak periods for DEP's legacy TOU-D rate schedule that includes a demand charge. According to the Public Staff, customers taking service under DEP's TOU-D would be at the greatest risk of higher than expected bills due to battery charging during on-peak periods. The Public Staff stated that it is not at this point recommending that the Companies implement operational control schemes to prevent customers from charging batteries during on-peak periods. However, the Public Staff recommended that the Companies minimize charging during on-peak periods to the greatest extent possible.

The Public Staff further noted that in discovery responses Duke stated that although eligible PowerPair participants must own their home, participation in the Battery Control Options would not be limited to customers that own their home so long as the customer can provide Duke with a statement of the homeowner's consent. In conclusion, the Public Staff stated that the proposed DSM Program Modifications appear to be consistent with N.C. Gen. Stat. § 62-133.9, Commission Rule R8-68, the Companies' DSM/EE cost recovery mechanisms and IRPs. Further, the Public Staff stated that the DSM Program Modifications have the potential to encourage DSM/EE and appear to be in the public interest. Moreover, the Public Staff stated that it had not discovered information suggesting that the Battery Control Options would affect a customer's decision to install natural gas or electric service. As a result, the Public Staff recommended that the Battery Control Options be approved by the Commission as new DSM programs and that the Companies be allowed to seek the recovery of their costs and incentives for the programs in their annual DSM/EE cost recovery proceedings.

EM&V

The Public Staff recommended that evaluation, measurement and valuation (EM&V) reports over the initial three years of the pilot include the collection of ample data to assess both the PowerPair pilot and the Battery Control benefits and cost effectiveness. According to the Public Staff, the EM&V should go beyond traditional studies and determine whether PowerPair should continue, be modified, or discontinued. Additionally, the EM&V should compare program costs and benefits to utility-scale solar and energy storage resources, emphasizing carbon reduction targets. The Public Staff stated that it is particularly interested in understanding whether solar and energy storage incentivized and controlled through the PowerPair pilot and the Battery Control option should play a continuing role in achieving carbon reduction targets set forth in N.C.G.S. § 62-110.9. The Public Staff recommended that Duke be required to submit a data collection and analysis plan for obtaining these research objectives once the EM&V plan is developed.

Finally, the Public Staff suggested that there may be the potential to expand the availability of PowerPair and Battery Control to non-residential customers in the future, so long as such expansion maintained the emphasis on system benefits and cost effective emission reductions.

AGO

The AGO stated that Duke's PowerPair proposal is consistent with the requirements of the Commission's Smart Saver Order, and that the AGO appreciates Duke's consideration of feedback from various stakeholders, including increasing the annual participation limit and allowing customers with either electric or gas heating systems to participate. The AGO suggested that in the future PowerPair participation should be open to specific customer groups, such as income-qualified customers, customers dependent on medical devices, and critical infrastructure facilities. The AGO provided examples of similar programs in other jurisdictions in support of this recommendation.

SEIA

SEIA stated that it supports the proposed PowerPair Pilot Program but suggested continuous improvements based on emerging data and narratives. For example, SEIA proposed exploring the involvement of third-party aggregators to optimize customer experiences and incentivize solar + storage usage during system emergencies. SEIA also recommended transitioning to a pay-for-performance model for a permanent program, thereby aligning incentive payments with actual system benefits. It further suggested waiving the capability factor adjustment initially and being flexible with customer situations to prevent negative experiences that could deter program participation.

SACE, NCSEA and Vote Solar

SACE, et al. stated that stakeholders are concerned about Duke's proposed data reporting. They stated that the Smart Saver Order required data on customer demographics, including income, family size, home ownership, location, and pre- to post-pilot electricity

usage. They contended that Duke's proposal falls short of these data requirements. In particular, SACE, et al. maintained that data about income and family size is crucial in order to assess accessibility of the program for low to moderate income (LMI) households, and that stakeholders requested Duke to track additional data, such as age, gender, race or ethnicity, housing type, housing age, zip code, primary and secondary languages spoken at home, education level, employment status, disability status, estimated energy burden, and participation in other relevant LMI programs. Moreover, SACE, et al. recommended that Duke be required to provide an annual narrative report on how battery control affects Duke's visibility and control over the grid edge, including information on storage dispatch frequency and timing.

REPLY COMMENTS

Duke proposed several changes to PowerPair and Battery Control in response to the parties' comments and recommendations.

In response to the Public Staff's concern about cohort switching, Duke proposed that participants be required to remain in their initial cohort for two years, rather than three years as proposed by the Public Staff, before switching, and that cohort switching be limited to no more than two times during the 10-year enrollment period. Duke stated that this two-year required participation is a fair compromise between its initial 12-month suggestion and the Public Staff's 3-year recommendation. Duke stated that a two-year required participation in the initial Cohort reflects: (1) the need to obtain data regarding participation in the Cohorts, and (2) a recognition that technology and customer needs may change over time and that customers may desire to switch Cohorts based on those changes. Also, Duke agreed with the Public Staff's recommendation that for the initial three-year period, customers in Cohort A are prohibited from participating in a Battery Control Option.

In addition, Duke agreed to increase the battery incentive from its initially recommended \$240/kWh to \$400/kWh, a bit short of the Public Staff's recommendation of \$500/kWh. Duke stated that \$400/kWh is based on its average North Carolina system costs and achieves at least a 17% overall cost reduction for the participant, an amount that the Companies contends is reasonable. Duke included a table that showed a side-by-side comparison of the Public Staff's and the Companies' proposals regarding the overall anticipated savings and cost reductions from the PowerPair Pilot and the IRA tax credit. In addition, Duke stated that DEP and DEC would monitor customer adoption rates and would be open to adjusting the battery incentive if necessary to increase participation in PowerPair.

Moreover, Duke agreed to add a minimum level of 30 Control Events per year, with such events not to exceed the originally proposed maximum of 36 Control Events per year. Further, Duke accepted the Public Staff's recommendation about placing a limitation on battery charging. Duke stated that it would modify the System Emergency Clause in the PowerPair tariffs to include language allowing Duke to prevent a customer from charging the customer's battery from the grid or allowing Duke to disconnect the customer's load, without such action constituting a Control Event, if the customer's battery operation threatens service continuity, reliability, or safety. The language proposed by Duke is:

The Company reserves the right to prevent the Customer's Battery from charging from the grid if continuity of service is threatened, or to disconnect the customer's load entirely if the operation of the Customer's Battery threatens the reliability or safety of the Company's system. The Company's exercising of this right does not constitute a Control Event.

Duke's proposed language would delete the ending phrase "and the Company will not discharge or charge the Customer's Battery during such an event" that was proposed by the Public Staff.

Further, addressing another recommendation by the Public Staff, Duke stated that it would minimize customer charging of batteries, to the greatest extent possible, during on-peak periods. However, Duke declined to accept the Public Staff's recommendations to increase the monthly battery control incentive for Cohort B participants from \$6.50/kW to \$10/kW, and to dispense with the battery capability factor adjustment in favor of using the sum of the actual amount of power discharged from the battery during each Control Event each month. Duke contended that these changes would be premature, would impose more costs on ratepayers, and could potentially discourage customer participation in Cohort A. Duke stated that it plans to maintain the battery capability factor adjustment but reassess the battery control incentive after the EM&V report is completed.

Duke reaffirmed its commitment to collecting required PowerPair data in response to the Smart Saver Order. In addition, it agreed to explore maintaining the data so as to distinguish between all-electric and gas heating customers and to explore the collection of additional data during participant interconnection. However, Duke rejected the additional data collection requests for information about race, income, employment, and disability status due to Duke's concerns about practicality, invasiveness, and reliability. Duke further objected to the recommendations for extensive reporting requirements beyond those in the Smart Saver Order, contending that they would be unnecessary and burdensome.

In addition, addressing concerns raised by the Public Staff, Duke agreed to include in its final report a narrative on PowerPair's interactions with the Integrated System Operations Process (ISOP), and a discussion about participation rates for customers who own their solar and storage equipment versus those who lease it. However, Duke rejected the Public Staff's recommendations that the Companies include in the EM&V an evaluation of the benefits and cost effectiveness of the PowerPair Pilot and a recommendation as to whether the program should be continued, modified, or discontinued, with the recommendation being based on the costs and benefits of PowerPair relative to the costs and benefits of utility scale solar and energy storage resources procured pursuant to the Carbon Plan. Duke contended that complying with the Public Staff's recommendations would be onerous and would greatly expand the scope of the EM&V report requirements specified in the Commission's Smart Saver Order. Additionally, Duke contended that an EM&V study is not the appropriate means of evaluating costs and benefits of the program because PowerPair is not a DSM/EE program.

Finally, responding to comments calling for flexibility in addressing lessons learned and the need for changes to PowerPair, Duke committed to continuously monitor, adjust and modify the program as necessary to improve it, and stated that it anticipates submitting future

modifications to PowerPair at appropriate times. Specifically, Duke stated that within 12 months after implementation of the Pilot it plans to recommend modified or additional cohorts, and that such modified cohorts might include income-qualified customers, customers dependent on medical devices, or a comparable program for non-residential customers or other targeted participants.

Discussion

In the Smart Saver Order the Commission set forth the details of the framework for Duke to include in a pilot program pairing solar generation with energy storage. Duke, the Public Staff and other stakeholders did a thorough and commendable job of incorporating most of the details of the framework into Duke's PowerPair proposal. In addition, Duke's proposal has the support of all parties who filed comments, albeit with a number of recommended changes, several of which Duke did not accept.

Contested Recommended Changes

Participation

In Duke's reply comments, Duke addressed the Public Staff's recommendation about cohort switching and proposed that participants be required to remain in their initial cohort for two years (rather than three years as proposed by the Public Staff) before switching, and that cohort switching be limited to no more than two times during the 10-year enrollment period. Duke also proposed that for the initial two-year period, customers in Cohort A be prohibited from participating in a Battery Control Option. The Commission agrees with Duke that a requirement that participants remain in their initial Cohort for two years is a fair compromise with the Public Staff's recommendation and that the two-year period will enable Duke to obtain necessary data regarding participation. The Commission also concludes that it is appropriate to prohibit customers in Cohort A from participating in a Battery Control Option during the initial two-year period.

Battery Control Incentives

Duke initially proposed a battery incentive of \$240/kWh for all PowerPair participants. The Public Staff recommended that the battery incentive be increased to \$500/kWh based on the Public Staff's higher estimate for installed equipment and its concern that PowerPair might not attract enough participants. Duke countered in its reply comments that it would agree to increase the battery incentive to \$400/kWh. Duke stated that the \$400/kWh incentive is based on its average North Carolina system costs and achieves at least a 17% overall cost reduction for the participant, an amount that the Companies contended is reasonable. Further, Duke committed that DEP and DEC would monitor customer participation rates and would be open to adjusting the battery incentive if necessary to increase participation in PowerPair.

For Cohort B participants, Duke initially proposed a monthly \$6.50/kW battery control incentive, adjusted by a battery capability factor of 56.7%. In response to the Public Staff's proposed revision to the calculation of the battery capability factor, Duke agreed to increase

the factor to 70.9%. In addition, the Public Staff recommended increasing the battery control incentive to \$10/kW per month based on the Public Staff's contention that the \$6.50/kW incentive would be significantly less than Duke's avoided capacity and T&D costs. Further, the Public Staff recommended that rather than using the proposed battery capability factor Duke should base the monthly battery control incentive on the sum of the actual amount of power discharged from the battery during each Control Event. Duke did not agree with these two proposed changes to the battery control incentive. It contended that these changes would be premature, would impose more costs on ratepayers, and could potentially discourage customer participation in Cohort A. Further, Duke committed that it would reassess the battery control incentive after the EM&V report is completed.

The Commission agrees with Duke's offer to increase the battery incentive to \$400/kWh, and Duke's acceptance of the increase of the battery capability factor to 70.9%. In addition, the Commission agrees with Duke that it is premature to modify the battery control incentive to make the two additional changes recommended by the Public Staff to (1) increase the incentive amount to \$10/kW, and (2) calculate the monthly incentive based on the actual amount of power discharged from the battery by Duke each month. PowerPair is a pilot program and Duke committed to monitor participation rates with an openness to changing the battery incentive and/or battery control incentive if necessary to attract more participants. In addition, the Public Staff's recommended change in computation methodology for the battery control incentive – from Duke's proposed set dollar amount per month to an amount based on the actual amount of power discharged from the battery during each Control Event – would introduce uncertainty for participants about the monthly amount of the incentive. Under Duke's proposal, a Cohort B participant will know that the maximum number of Control Events per year will be 36, and the minimum number will be 30. Moreover, the participant will know that the battery capability factor is 70.9%. With this information, the participant can calculate a reasonably accurate estimate of the battery control incentive to be received per year.

Further, the Public Staff's concern about attracting sufficient participants for Cohort B is not totally applicable to the battery control incentive because the Companies' Battery Control Options Programs would also be open to customers who are not PowerPair participants. Moreover, Duke's point about increasing the cost of the pilot is well taken. As a result, the Commission will accept Duke's offer to increase the battery incentive to \$400/kWh and the battery capability factor to 70.9%, but will decline to require Duke to accept the Public Staff's recommendations for increasing the battery control incentive to \$10/kW and changing the computation methodology for the battery control incentive to reflect the actual amount of power discharged from the battery during each Control Event.

Demographic Data Collection

SACE, et al. recommended that Duke be required to greatly expand the amount of demographic information obtained from PowerPair participants. They contended that Duke should obtain data about income and family size in order to assess whether the program is reasonably available to LMI households, and also requested that Duke collect data about age, gender, race or ethnicity, housing type, housing age, zip code, primary and secondary languages spoken at home, education level, employment status, disability status, estimated

energy burden, and participation in relevant LMI programs. Duke opposes these additional demographic data collection requests based on its concerns about practicality, invasiveness, and reliability.

The Commission acknowledges that the Smart Saver Order directed Duke to obtain information about participant income, family size, home ownership, and urban/rural location as part of the pilot's research objectives. Smart Saver Order, at 7. Nevertheless, the Commission is sensitive to Duke's concerns about customer privacy and accepts Duke's judgment that such personal questions could be viewed by its customers as invasive and, thus, a deterrent to participation. However, the Commission will require Duke to further discuss with the stakeholders the possibility of creating a survey that can be used at the conclusion of the pilot to request voluntary, anonymous income, family size, home ownership, location and other information from participants.

EM&V Analyses

The Public Staff recommended that Duke be required to include in the EM&V report an evaluation of the benefits and cost effectiveness of PowerPair and a recommendation as to whether the program should be continued, modified, or discontinued, with the recommendation being based on the costs and benefits of PowerPair relative to the costs and benefits of utility scale solar and energy storage resources procured pursuant to the Carbon Plan. Duke opposed these recommendations. According to Duke, compliance with the Public Staff's recommendations would be onerous and would greatly expand the scope of the EM&V report specified in the Commission's Smart Saver Order. Also, Duke submitted that an EM&V study is not the appropriate means of evaluating costs and benefits of the program because PowerPair is not a DSM/EE program and because the Pilot is "simply designed to incentivize the installation of solar plus storage outside the framework of an EE/DSM program."

The Commission agrees with Duke that the EM&V study is not the usual or appropriate vehicle for assessing cost effectiveness or the future plans for a pilot program. However, the Smart Saver Order required that Duke file a final report that includes "a robust discussion and analysis of the data and information gathered through the pilot." *Id.* at 8. The Commission concludes that Duke should discuss with the Public Staff and other stakeholders the details to be included in the final report and work towards a consensus on the details. In addition, the Commission directs that Duke include in the final PowerPair report: (1) information on the total cost of installation of the participants' solar panels and batteries; (2) the bill impacts on customers who were participants in the pilot; (3) the bill impacts on customers who were not participants; and (4) a recommendation as to whether the program should be continued, modified, or discontinued.

Variances from Smart Saver Order

As Duke acknowledged, its proposal differs from the guidelines stated in the Smart Saver Order in four respects: (1) limiting the battery incentive payment to a maximum installed capacity of 13.5 kWh; (2) requiring Cohort B participants to participate in the modified EnergyWise/Power Manager Battery Control Option; (3) allowing PowerPair to be

available to customers with gas heating systems; and (4) allowing DEP and DEC to immediately open the program to a maximum of 30,000 kW of solar generation for each utility, rather than an annual 10,000 kW limit for each Company. Duke stated that, in accordance with the Smart \$aver Order, it developed PowerPair in collaboration with the Public Staff and numerous other stakeholders. Duke further stated that it convened meetings with the stakeholders and received extensive comments and feedback about the Program, and that the Application reflects the stakeholders' input. In particular, Duke stated that the Public Staff and other commenters did not oppose the variances from the Smart \$aver Order. The Commission appreciates the work and views of the stakeholders and Duke on these issues, and the Commission concludes that there is good cause to accept the four variances from the Smart \$aver Order proposed by Duke.

Conclusion

Based on the foregoing and the record, the Commission concludes that DEP's and DEC's proposed PowerPair Solar and Battery Installation Programs and Battery Control Options Programs, as modified by the changes detailed in this Order, are consistent with N.C. Gen. Stat. § 62-133.9 and Commission Rule R8-68, and are in the public interest. As a result, the Commission finds good cause to approve DEP's and DEC's PowerPair Solar and Battery Installation Programs and Battery Control Options Programs on condition that DEP and DEC make the changes to the programs that they agreed with and those changes that are approved in this Order.

Finally, the Commission concludes that Duke should investigate the availability of other North Carolina rebate programs for the installed equipment and coordinate its efforts on PowerPair with such other rebate programs.

IT IS, THEREFORE, ORDERED as follows:

1. That DEP's and DEC's proposed PowerPair Solar and Battery Installation Programs are hereby approved;
2. That DEP's and DEC's proposed modifications to EnergyWise and Power Manager, respectively, being the Battery Control Options Programs, are hereby approved as new DSM programs;
3. That on or before 30 days after the date of this Order DEP and DEC shall file revised tariffs and Terms and Conditions for PowerPair that are consistent with the details approved in this Order, with the tariffs having an effective date of 120 days after the date of this Order;
4. That on or before 30 days after the date of this Order DEP and DEC shall file revised tariffs for the Battery Control Options Programs that are consistent with the details approved in this Order, with the tariffs having an effective date of 180 days after the date of this Order;

5. That on or before 30 days after DEP and DEC file the revised PowerPair tariffs and Terms and Conditions and the revised the Battery Control Options Program tariffs, the Public Staff shall file a statement informing the Commission that it has reviewed DEP's and DEC's revised tariffs and Terms and Conditions and stating whether said revisions are consistent with the details for such programs approved in this Order;

6. That on or before 30 days after the date of this Order DEP and DEC shall file an updated cost analyses for the Battery Control Options Programs that include consideration of the increased battery storage incentives approved herein;

7. That Duke shall file annual status reports on PowerPair and the Battery Control Options and a final report. Duke shall discuss with the Public Staff and other stakeholders the details to be included in the final report and work towards a consensus on the details. In addition, Duke shall include in the final PowerPair report: (1) information on the total cost of installation of the participants' solar panels and batteries; (2) the bill impacts on customers who were participants in the pilot; (3) the bill impacts on customers who were not participants; and (4) a recommendation as to whether the program should be continued, modified, or discontinued;

8. That Duke shall investigate the availability of other North Carolina rebate programs for the installed equipment and coordinate its efforts on PowerPair with such other rebate programs;

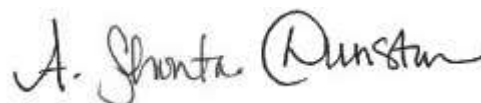
9. That the Commission shall determine the appropriate ratemaking treatment for the PowerPair Pilot Program consistent with the guidelines stated in this Order and when DEP and DEC seek cost recovery for the Programs in their future REPS rider proceedings, in accordance with N. C. Gen. Stat. § 62-133.8(h); and

10. That the Commission shall determine the appropriate ratemaking treatment for the Battery Control Options Programs, including the recovery of program costs and appropriate incentives, when DEP and DEC seek cost recovery for those Programs in their future DSM/EE rider proceedings, in accordance with N.C.G.S. § 62-133.9, Commission Rule R8-69, and the applicable DSM/EE cost recovery mechanism.

ISSUED BY ORDER OF THE COMMISSION.

This the 11th day of January, 2024.

NORTH CAROLINA UTILITIES COMMISSION



A. Shonta Dunston, Chief Clerk