



**NORTH CAROLINA
PUBLIC STAFF
UTILITIES COMMISSION**

February 28, 2020

Ms. Kimberley A. Campbell, Chief Clerk
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

Re: Docket No. E-2, Sub 1197 and Docket No. E-7, Sub 1195 -
Application for Approval of Proposed Electric Transportation Pilot

Dear Ms. Campbell:

Attached for filing in the above-referenced docket is the Public Staff's Proposed Order.

By copy of this letter, I am forwarding a copy to all parties of record by electronic delivery.

Sincerely,

Electronically submitted
s/ Dianna W. Downey
Staff Attorney
dianna.downey@psncuc.nc.gov

DWD/cla

Attachment

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Feb 28 2020

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. E-2, SUB 1197
DOCKET NO. E-7, SUB 1195

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of
Application by Duke Energy Progress, LLC, and) PUBLIC STAFF'S
Duke Energy Carolinas, LLC, for Approval of) PROPOSED ORDER
Proposed Electric Transportation Pilot)

BY THE COMMISSION: On March 29, 2019, by Duke Energy Progress, LLC (DEP) and Duke Energy Carolinas, LLC (DEC) (collectively "Duke"), filed an application pursuant to N.C. Gen. Stat. § 62-140 and various Commission rules requesting approval of their respective Electric Transportation Pilots (ET Pilots). According to the application, the proposed ET Pilots consist of seven individual programs, as described in more detail below.

On April 4, 2019, the Commission issued an Order requesting comments and reply comments on the Duke's proposal. Petitions to intervene were filed and granted by the Commission for the North Carolina Sustainable Energy Association (NCSEA); Sierra Club; ChargePoint, Inc. (ChargePoint); Environmental Defense Fund (EDF); North Carolina Clean Energy Business Alliance (NCCEBA); Zeco Systems, Inc. d/b/a/ Greenlots (Greenlots); and the North Carolina Justice Center and Southern Alliance for Clean Energy (NCJC/SACE).

On July 3, 2019, NCCEBA and NCJC/SACE filed initial comments. On July 5, 2019, NCSEA, Sierra Club, ChargePoint, EDF, Greenlots, and the Public Staff

filed comments. On July 22, 2019, EDF filed reply comments. On August 9, 2019, ChargePoint, Sierra Club, Greenlots, NCJC/SACE, and Duke filed reply comments. On October 10, 2019, Sierra Club filed a Motion for Leave to Amend Reply Comments.

On October 25, 2019, the Commission entered an Order scheduling a hearing on this matter for November 21, 2019. On November 1, 2019, the Commission entered an Order providing notice of the topics it intended to ask questions about at the hearing. The hearing was held on November 21 as scheduled. Duke made available Laura Bateman, Director, Rates and Regulatory Strategy, and Lang Reynolds, Director of Electric Transportation, for Commission questions and questions on the Commission's questions regarding Duke's proposal. On December 18, 2019, Duke filed late-filed exhibits in response to Commission questions at the November 21 hearing.

On December 17, 2019, the Commission entered an Order requiring Duke and the Public Staff and allowing other parties to file proposed orders on or before February 3, 2020. On February 3, 2020, proposed orders were filed by Duke and the Public Staff.

For the reasons discussed in detail below, the Commission finds that Duke's application for approval of the ET Pilots is not a proof-of-concept pilot program and is not approved as currently proposed.

DESCRIPTION OF THE PROGRAMS IN THE ET PILOTS

The programs proposed by Duke are as follows:

Residential EV Charging Program

Under the proposed Residential Charging Program, Duke would provide a rebate of \$1,000 per installation for up to 500 DEC and 300 DEP residential customers to install qualifying, level 2, electric vehicle supply equipment (EVSE). In exchange, the customers would allow Duke to gather data and have onboard load control capability. However, Duke would not begin to utilize load control until the second year of the program. The estimated cost of this program is \$1.175 million for DEC, and \$705,000 for DEP, for a total of \$1.88 million.

Fleet EV Charging Program

Under the proposed Fleet EV Charging Program, Duke would offer a rebate of \$2,500^{1,2} per installation to install EVSE for commercial and industrial customers that operate fleet vehicles. In this program, up to 500 rebates would be made available to DEC customers and 400 rebates to DEP customers. Customers would be required to be served under a commercial time of use rate, with all EVSE equipment behind a separate meter. The estimated cost of this program is \$1.925 million for DEC, and \$1.54 million for DEP, for a total of \$3.465 million.

¹ Customers may qualify for one charging station per electric vehicles, so theoretically one company could apply for, and obtain, all of the rebates.

² Commercial EVSE installations are estimated to cost between \$2,550 and \$6,500 per port.

EV School Bus Charging Station Program

For the EV School Bus Charging Station Program, Duke would offer a rebate of \$215,000 per bus for school systems to purchase electric school buses and the required EVSE³ to charge the buses. DEC would offer rebates to approximately 55 customers, and DEP would offer rebates to approximately 30 customers.⁴ The customers would be required to permit access to all vehicle charging data and allow Duke to perform testing of charging load management and bi-directional charging capabilities. Duke would own the EVSE as well as the EV bus battery. Duke contends that they could repurpose the batteries as grid assets at the end of the useful life of the buses.⁵ The estimated cost of this program is \$11,981,750 for DEC, and \$6,535,500 for DEP, for a total cost of \$18,517,250.

EV Transit Bus Charging Station Program

Under the EV Transit Bus Charging Station Program, Duke would install and own 60 EVSE stations in DEC's service territory and 45 EVSE stations in DEP's territory.⁶ According to the tariffs attached to the application, Duke would provide funding of \$75,000 per EV transit bus procured within the preceding 24 months.⁷ The associated EVSE would be owned by Duke. To participate, a

³ Duke has assumed that the cost of each EVSE (including installation) will be \$20,000 of the \$215,000 per bus total.

⁴ When asked how Duke arrived at the proposed number of school bus rebates, Duke indicated that they determined the number based on customer school district interest.

⁵ Duke estimated the useful life of the buses to be at least 12 years. The purchase and maintenance of school buses is governed by State law, including when buses are eligible for replacement. See N.C. Gen. Stat. § 115C-249.

⁶ When asked by the Public Staff during discovery how Duke arrived at the number of charging stations, the Company indicated that they determined the program size based on discussions with transit agencies regarding current and future interest in EV transit buses.

⁷ The estimated cost for one EVSE station is \$75,000, including power upgrades.

customer would be required to be on a time-of-use (TOU) rate schedule. The estimated cost of this program is \$4,671,000 for DEC and \$3,503,250 for DEP, for a total cost of \$8,174,250.

Multi-Family Dwelling Charging Station Program

Under the Multi-Family Dwelling Charging Station Program, Duke would install, own, and operate, level 2 (L2) EVSE at multi-family dwellings. Duke would charge a fee based on the marginal energy component of the applicable Company's currently approved Small General Service schedule, plus a \$0.02/kWh charge to cover network platform and transaction fees. Duke propose to deploy 100 stations in DEC's service territory, and 60 stations in DEP's service territory. The estimated cost of this program is \$1,285,000 for DEC and \$771,000 for DEP, for a total cost of \$2,056,000.

Public L2 Charging Station Program

Duke's proposed Public L2 Charging Program would allow Duke to install L2 EVSE at eligible key public destination locations. Similar to the Multi-Family Dwelling Charging Station Program, Duke would charge a fee based on the marginal energy component of the Small General Service schedule, plus \$0.02/kWh to cover network, platform, and transaction fees. Duke proposes to install 100 stations in DEC's service territory, and 60 stations in DEP's service

territory.⁸ The estimated cost of this program is \$1,285,000 for DEC and \$771,000 for DEP, for a total cost of \$2,056,000.

Fast Charging Program

Under the proposed Fast Charging Program, Duke would install direct current fast chargers (DCFC) along highway corridors through Duke's service territories. Duke would own and operate 70 chargers at approximately 35 locations in DEC's service territory and 50 chargers at approximately 25 locations in DEP's service territory. The estimated cost of this program is \$20,107,500 for DEC and \$14,362,500 for DEP, for a total cost of \$34,470,000, and is by far the most expensive program proposed.

In addition to the seven programs described above, Duke proposes to spend \$3,375,000 for education and outreach, and another \$2,025,000 for ongoing operations and maintenance.

It is undisputed that the estimate costs for all seven programs exceed the estimated total three-year net revenue that would be generated by the charging equipment by approximately \$65 million.

⁸ When asked by the Public Staff during discovery how Duke arrived at these numbers, Duke indicated that the numbers were based on the number of charging stations already installed in a three-year time period using grants provided by Duke pursuant to its settlement with the U.S. Environmental Protection Agency and others. See <https://news.duke-energy.com/releases/duke-energy-project-to-increase-public-ev-charging-stations-in-n-c-by-30-percent> (with links); <https://www.epa.gov/enforcement/duke-energy-corporation-clean-air-act-caa-settlement>.

INITIAL COMMENTS OF THE PARTIES

Public Staff

Scope of proposals

The Public Staff asserts that as well-intentioned as Duke's proposals may be, it is inaccurate to call the proposed programs "pilots". The Public Staff conducted a review of EV-related, utility-conducted activities occurring in other states. The review focused on those activities as of December 31, 2018. Exhibit 1 of the Public Staff's comments contained a list of the studies, pilots, and EV programs that were reviewed. While not intended to be an exhaustive or comprehensive list of activities occurring in other jurisdictions, the list was intended to demonstrate that the proposed programs are not new, and, in many cases, mirror activities already underway or that have concluded.

For example, Duke Energy Florida (Item 9 in Exhibit 1) is conducting programs similar to the proposed EVSE programs for multi-unit dwellings, workplaces, public L2, and DCFC installations. In addition, Duke has pending before the Public Service Commission of South Carolina EV-related programs totaling \$14.5 million that are virtually identical to programs proposed in North Carolina (Item 23 in Exhibit 1). The Public Staff also notes that DEC conducted a residential EV-related pilot between 2011 and 2014 in North⁹ and South Carolina.¹⁰

⁹ See Docket No. E-7, Sub 969. DEC filed its final report on this pilot on August 19, 2016, identifying the learnings and conclusions the Company drew from the pilot. <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=425ec0c9-01e7-4aad-8b1b-4a6b47c94007>.

¹⁰ See Public Service Commission of South Carolina, Docket No. 2011-114-E. <https://dms.psc.sc.gov/Web/Dockets/Detail/112410>

The objectives of that pilot were intended to gain a better understanding of customer charging behavior, the impact on demand and infrastructure, and the capabilities of the EVSE. DEC provided the EVSE to participants and paid up to \$1,000 for the costs of installing the EVSE. While the Public Staff recognizes that EV and EVSE technology is changing, that does not mean that the lessons learned from this pilot are irrelevant or bear repeating in another, much more expensive pilot. Outside of Duke, Delmarva Power & Light (see Item 2 in Exhibit 1), and PEPCO (Item 8 in Exhibit 1) have pilots that are very similar to the ET Pilots.

The Public Staff states that Duke's proposed programs in the ET Pilots are designed to obtain infrastructure-related data that is likely already publically available, or will be available within the next 12 to 18 months, from other utilities and jurisdictions. That data includes load patterns related to EV charging, the impact of managed charging, and how managed charging can shape load patterns and customer charging behavior. Additionally, because EV-related loads are not weather-sensitive, load shapes of other utilities (residential and non-residential) should be indicative of the load shapes of North Carolina consumers. For example, it is well known that approximately 80% of residential charging occurs at home in the late afternoon and evening.¹¹ There is no reason to believe that results of a North Carolina pilot would find otherwise. The Public Staff also believes that any EV-related tariffs developed by other utilities would likely be adaptable in North

¹¹ Multiple sources reference the same information for residential charging patterns. For example, see page 5-2, "Electric Vehicle Driving, Charging, and Load Shape Analysis," EPRI, 2018 Technical Report (EPRI Study). Furthermore, this analysis provides much more information on the charging behaviors of residential customers and the drivers that could influence that behavior. <http://mydocs.epri.com/docs/PublicMeetingMaterials/ee/000000003002013754.pdf>.

Carolina. Duke made it clear in the application and in data responses that they are aware of and are monitoring efforts in other states. According to the Public Staff, there is no reason to duplicate those efforts here by approving the expensive programs proposed by Duke.

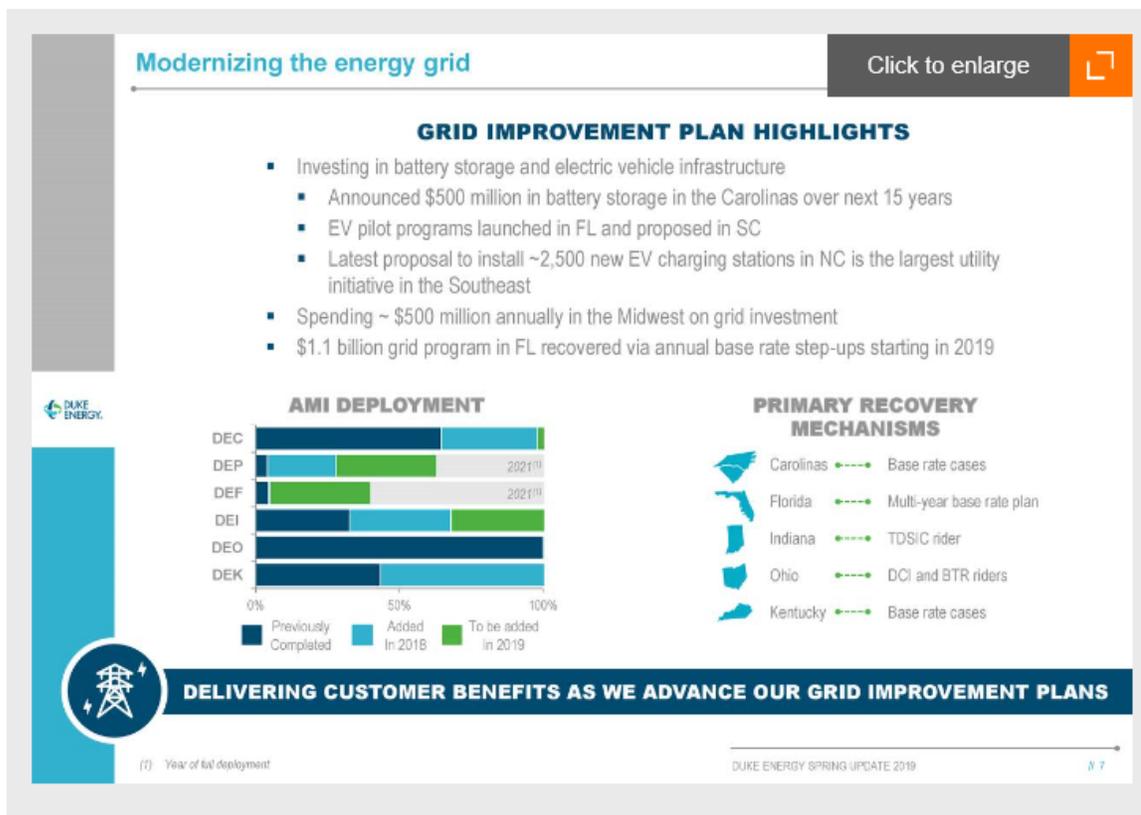
The Public Staff states that at best, only the Residential EV Charging and Fleet EV Charging programs arguably qualify as pilots, but there are critical omissions from those programs that would support a finding that they are pilots. As a pilot project, the Public Staff would expect to see Duke piloting various rate designs to evaluate the extent to which various rate designs impact customer usage and promote, or inhibit, managed charging. While the Residential EV Charging program would evaluate active managed charging via onboard load control capabilities in the second year, a robust pilot project should evaluate passive managed charging through experimental rate designs and other mechanisms. As 80% of residential EV owners charge at night, any pilot project should explore the vast array of mechanisms to determine what drives, and does not drive, customer behavior.¹² This information is critical to integrating EV charging customers in an efficient manner. The Fleet EV Charging program is similarly lacking in experimental rate designs. Inclusion of various experimental rate designs and other mechanisms would render these programs more characteristic of a pilot.

¹² For example, as North Carolina experiences increased “duck curve” load patterns, a pilot tariff could evaluate customer willingness to charge during times of peak solar production.

The Public Staff asserts that the remainder of the proposed programs cannot be characterized as pilot programs for a variety of reasons. The EV School Bus and EV Transit Bus programs are not reflective of programs that would be offered by Duke in the ordinary course of business, i.e., providing electric service. The Department of Public Instruction, school systems, and municipalities are responsible for purchasing buses for their respective systems; there is no justifiable reason why Duke would insert themselves into the process. Bus systems have predictable routes and schedules; thus, determining the charging characteristics of buses is easily modeled, if not already available. The Public Staff contends that to the extent Duke is interested in exploring the use of small scale batteries to provide support to the grid during summers (school buses) or overnight (transit buses), that data can be easily obtained by directly deploying small scale batteries within Duke's systems.

The various public charging station programs are merely capital projects. The Public Staff was unable to identify any unique learning opportunities arising out of the construction of over 400 public charging stations across the State, especially given the cost. Duke's proposal is essentially a request to pre-approve infrastructure buildout. The Public Staff included a slide presented by Duke to investors on May 22, 2019 to demonstrate this point:¹³

¹³ <https://seekingalpha.com/article/4265902-duke-energy-duk-investor-presentation-slideshow>



As shown in the slide, Duke represents the expenditures to install the charging stations in the proposed ET Pilots to be part of Duke's Grid Improvement Plan.¹⁴ Duke's news release on its web site touts the proposal as "the largest investment in electric vehicle (EV) infrastructure ever in the Southeast – a \$76 million initiative to spur EV adoption across the state."¹⁵ There was no mention of any "pilot" aspect or lessons hoped to be gained from the proposal. Additionally, on pages 5-6 of the application in this docket, Duke discussed the increasing deployment of EV charging infrastructure and stated that their proposal would add North Carolina to the growing number of states deploying EV infrastructure. The tariffs attached to

¹⁴ Grid Improvement Plan is Duke's current iteration of the original Power/Forward Carolinas initiative.

¹⁵<https://news.duke-energy.com/releases/duke-energy-proposes-76m-electric-transportation-program-in-north-carolina-southeast-largest-utility-ev-initiative-yet>.

the application reflect that the proposals are primarily intended to deploy and support EVs and EV infrastructure.¹⁶ In response to a data request, Duke admitted that the public charging portion of the programs (Multi-Family, Public L2, and DCFC) is intended to provide a foundational level of infrastructure for EV adoption. As shown by Duke's own admissions and representations, these programs are clearly not "pilots" as that term is generally understood. The Public Staff notes that Webster's online dictionary defines "pilot program" as an "activity planned as a test or trial." <https://www.webster-dictionary.org/definition/pilot%20program> See also <https://searchcio.techtarget.com/definition/pilot-program-pilot-study> "A pilot program, also called a feasibility study or experimental trial, is a small-scale, short-term experiment that helps an organization learn how a large-scale project might work in practice."

Evaluation and metrics

The Public Staff states that the value of a pilot project is to allow a utility to test a concept at a smaller scale without incurring significant costs that ultimately would be borne by customers. If a pilot is successful, the program can be deployed system-wide without the risk of program non-viability. If a pilot is unsuccessful, customers would be responsible for a fraction of the costs compared to a system-wide deployment. However, a pilot must have clearly defined objectives and goals that would define success and justify a broader, permanent program.

¹⁶ See the "Purpose" sections of Duke's Exhibits C through I.

The Public Staff asserts that Duke's proposal contains no objectives, metrics, goals, or other means of evaluating whether the program is a success or failure. There is no forecasting of how Duke will determine whether any of the program components should be expanded beyond the scope of the proposal. In addition, as stated earlier, much of the data likely to be collected by these pilots already exist; and the lack of objectives, metrics, goals, or other means of evaluating successful data collection further muddles what might be learned versus what is already known.

EV load forecasts

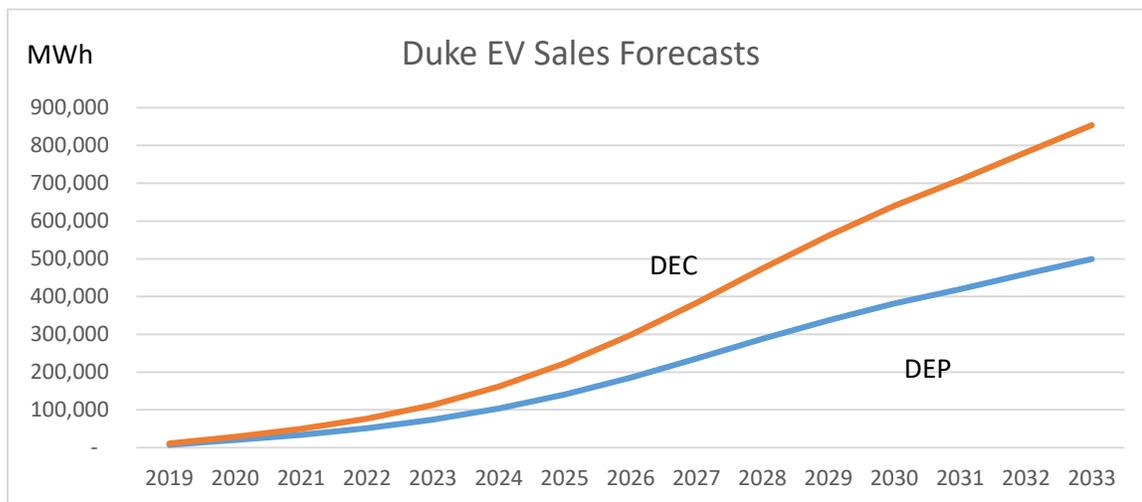
Many of the resources reviewed by the Public Staff regarding the trends in EV sales, and the impact that load will have on the bulk power system, looked at perspectives that extend through 2030 to 2040. Those forecasts suggest a very small increase in EV adoption until 2025, after which EV adoption is expected to increase at a greater pace.¹⁷ The Public Staff notes that in fact, the U.S. Energy Information Administration does not project a significant change in the fuel-of-choice for transportation through 2050.¹⁸

In their integrated resource plans (IRP) filed in 2018 in Docket No. E-100, Sub 157, Duke included a forecast of EV-related energy sales in their respective Tables C-7. Workpapers associated with Tables C-7 were used to develop the

¹⁷ "Electric Vehicle Sales Forecast and the Charging Infrastructure Required Through 2030," November 2018, EEI Report by Adam Cooper and Kellen Scheffer. https://www.edisonfoundation.net/iei/publications/Documents/IEI_EEI%20EV%20Forecast%20Report_Nov2018.pdf.

¹⁸ "Annual Energy Outlook 2019 with Projections to 2050," US EIA Document AE02019, January 24, 2019, www.eia.gov/aeo, <https://www.eia.gov/outlooks/aeo/pdf/aeo2019.pdf>.

chart below, which further identifies a slight increase in EV-related sales, but not until 2024 to 2025.



The Public Staff acknowledges that the EPRI Study suggests two key findings: (1) the EV world is dynamic and (2) charging infrastructure is being deployed and charging speeds are improving. Both of these findings suggest that the rate of EV adoption is likely to increase. However, nothing presented in the EPRI Study, nor any of the forecasts reviewed by the Public Staff, suggests an emergent situation that would warrant additional expenditures to repeat the same type of pilots being conducted across the country, particularly in the next three years. This is particularly true since, as the Public Staff believed, key findings and data from similar pilots around the country will be available for Duke to use.

Duke's cost-benefit analysis

Duke filed, as Exhibit B, a cost-benefit analysis for the ET Pilots (NC Study). The NC Study is similar to other cost-benefit studies conducted by the same author

for other utilities in other jurisdictions, including Duke Energy Florida, LLC,¹⁹ and was based on methodology and assumptions used by MJ Bradley & Associates (MJB&A) in another study on the roles of utilities in the EV market.²⁰ Overall, the Public Staff believes these studies to be reasonable attempts at quantifying the benefits and costs of electric vehicle adoption at various levels in a general sense. However, based upon additional discovery from Duke, the Public Staff identified some concerns with how the study estimates the number of EVs in each penetration scenario, and believes that the Commission should give limited weight to the study.

The NC Study developed costs and benefits under two distinct levels of EV adoption: a business-as-usual (BAU) scenario, and a more aggressive scenario (80x50) that is intended to reduce light-duty vehicles' (LDV) greenhouse gas (GHG) emissions by 70%-80% by 2050. The NC Study also acknowledged the more aggressive 80x50 scenario is not likely to occur without much more aggressive policy support by the State.

In the 80x50 scenario, the NC Study first sets a GHG reduction goal for LDVs of 80% in 2050. Once this emission reduction is quantified, the NC Study then estimates the number of EVs required to meet this emission reduction goal. This calculation requires an estimate of emission reductions for each EV, which

¹⁹ "Electric Vehicle Cost-Benefit Analysis – Plug-in Electric Vehicle Cost-Benefit Analysis: Florida," MJ Bradley & Associates, January 2019. <https://www.mjbradley.com/reports/plug-electric-vehicle-cost-benefit-analysis-florida>.

²⁰ "Mid-Atlantic and Northeast Plug-in Electric Vehicle Cost-Benefit Analysis – Methodology and Assumptions," MJB&A, December 2016. https://mjbradley.com/sites/default/files/NE_PEV_CB_Analysis_Methodology.pdf.

compares typical gasoline LDV emissions per mile to typical EV emissions per mile. While the former is a simple calculation based on typical emissions per gallon of gas and typical miles per gallon, the latter requires an assumption of the typical emissions per kWh of electricity.

This estimate of typical emissions per kWh of electricity requires assumptions to be made about the future makeup of power generation sources. The NC Study uses estimates for the SERC Reliability Corporation/Virginia-Carolinas (VACAR) sub-region from the U.S. Energy Information Administration's (EIA) Annual Energy Outlook 2017. Roughly, these estimates equate to 44% carbon-free electricity in 2015, 49% carbon free electricity in 2030, and 45% carbon-free electricity in 2050.²¹ In contrast, the combined 2018 IRPs of DEC and DEP project 60% carbon-free electricity by 2030.²² Thus, it appears as if the NC Study may be modeling a more carbon-intensive generation portfolio than Duke anticipates in its combined IRPs. Based upon the Public Staff's understanding of the 80x50 scenario in the NC Study, this could have the result of overestimating the number of EVs that are required to meet the 80x50 emission targets. Overestimating the number of EVs would have the effect of overestimating the number of charging stations required and overestimating the amount of revenue from each charging station.²³ The Public Staff is concerned that this "mismatch"

²¹ See Annual Energy Outlook 2017, "Electricity Generation by Electricity Market Module Region and Source" from the Energy Information Administration. <https://www.eia.gov/outlooks/archive/aeo17/>, Reference case table "A9", "Electric Power Sector" table, "Electric Generation by Electricity Market Module Region and Source".

²² See Docket No. E-100, Sub 157: DEC IRP at 8, DEP IRP at 8.

²³ More EVs would require more charging stations. However, if the number of EVs fell short of estimates, the total revenue collected from these charging stations would be lower than anticipated.

between EIA projections and Duke's IRPs could result in higher costs and lower revenues for the ET Pilots than anticipated.

Page ii of the NC Study suggests \$6.9 billion in benefits by 2050 at a moderate adoption trend that is supported by EIA. Figure 3 of the NC Study provides a graphical illustration of the estimated EV penetration scenarios, suggesting significant differences between the more aggressive GHG scenario and the more moderate EIA scenario by 2050. According to the Public Staff, this illustrates a high degree of uncertainty in the projections beyond 2025.

The Public Staff also is concerned that the cost-benefit analysis does not appropriately evaluate the potential impact of EV adoption and Duke's role in meeting the load obligations associated with that adoption. Duke indicates that the NC Study was not intended to provide a template for a cost-benefit analysis for each of the individual programs in the ET Pilots, and Duke has not conducted cost-benefit analyses for the individual programs. The Public Staff asserts that individual program cost-benefit analyses should be performed to ensure that spending on individual programs is cost beneficial.

Finally, the NC Study suggests on page 9 that additional revenues realized from EV-related energy sales will exceed the costs of new infrastructure needed to meet the additional loads. According to the study, under current rate structures this could create downward pressure on future rates under all scenarios. The NC Study included the benefits EV owners may realize, such as operational and fuel cost savings. The Public Staff believes both groups of benefits are appropriate for purposes of the NC Study. However, additional benefits such as energy security

and emission reductions are more related to the use of energy for transportation. The Public Staff states that these additional benefits are more societal and associated with the removal of fossil-fueled vehicles and may not be appropriate for a cost-benefit study focused on specific programs and aimed at determining whether ratepayers should pay for benefits that would be realized by society as a whole.

Other intervenors

NCCEBA: NCCEBA contends that Duke’s programs would represent a major encroachment of monopoly activity into an active and rapidly growing competitive market and the application should be denied.

ChargePoint: ChargePoint strongly supports utility investment in EV charging infrastructure, that utility programs should incorporate certain “best practices”, and that the proposed programs negatively impact existing competitive markets, restrict customer choices, and slow private investment. ChargePoint contends that none of the programs explicitly provide the participating customer a choice among EV charging networks, or enable participating customers to operate EV charging stations located on their own properties

Sierra Club: Sierra Club supports the EV pilots with minor modifications, including quarterly reporting, robust stakeholder advisory process, collecting and evaluating data as support for an EV-specific TOU rate, options for incentivizing off-peak charging, co-locating L2 and DC fast charging stations, and developing

solutions for improving access to clean transportation options for low and moderate-income communities.

NCSEA: NCSEA states that prior to approving Duke's application, the Commission should establish its goals in an open and transparent manner, and believes that the Commission should open a stand-alone proceeding to examine its goals for the deployment of EV charging infrastructure. NCSEA further states that the Commission should reject Duke's request to make capital investments in EV charging infrastructure, and instead direct Duke to develop and propose an EV "make-ready" program (i.e. one that would provide electrical service to the point where a charging station could be installed). NCSEA challenged Duke's calculation of market size for EV charging stations and states that Duke's proposal would leave no room for market participation in DCFC or public L2 plug. Further, Duke's knowledge of the grid would allow it to capitalize, and effectively monopolize, the market for charging infrastructure, and DCFC does not easily allow for DSM of EV charging and produces extremely high demands for short periods of time. According to NCSEA, capital investments approved by the Commission should focus on L2 managed charging, and Duke should be required to work with stakeholders to develop scoring criteria for locating charging infrastructure and file it with the Commission. NCSEA states that it is concerned about rate base treatment of costs, effectively rate setting outside of a rate case. NCSEA states that it is not opposed to the rebates proposed, but they should be lowered to \$500, which would allow more participants. NCSEA opposes the requirement under the EV Fleet program that customers take under TOU rate and states that the

Commission should direct Duke to propose EV-specific rate tariffs in their next rate cases and address the issue of EV rate design in a generic proceeding. NCSEA points out that scoring criteria is needed for the EV School Bus and Transit Bus programs. Finally, NCSEA contends that a third party should perform education and outreach and that more frequent reporting needed, like the rooftop solar rebate program.

Environmental Defense Fund: EDF's comments were directed toward the Fleet EV, School Bus and Transit Bus programs. EDF generally supports those programs but offers suggestions for improvement such as on-bill financing, bill protection, new EV rates to preserve affordability, mitigation of demand charges, an EV working group, make-ready work by Duke, load management, separate metering, and more detail on marketing.

SELC/NCJC: SELC/NCJC recommends that the Commission approve the ET Pilots subject to modifications, including quarterly reporting with certain detail, not allow distribution on first-come, first-served basis, make ET more accessible to low and moderate income customers (electric car sharing programs, lease, on-bill financing, allocate percentage of charging stations to disadvantaged communities), smart rate design, and guidelines for utility ownership of charging infrastructure. SELC/NCJC questions the rebate amount and suggested a stakeholder advisory council to help oversee the ET Pilots.

Greenlots: Greenlots strongly supports the ET Pilots, but states it is too modest in scale in relation to the significant benefits that stand to be unlocked with utility investment.

REPLY COMMENTS OF THE PARTIES

Duke: Duke focused its reply comments on the following: 1) the alignment of the ET Pilots with Governor Cooper's Executive Order 80; 2) the broad support of the pilots from stakeholders and intervenors; and 3) the contention that the proposal is appropriately framed as a pilot so Duke can prepare for increased EV usage. Duke contends that contrary to NCSEA's and NCCEBA's assertions, Duke's efforts to develop a program that will support EV adoption across the state can benefit potential market entrants by jumpstarting the market. Further, Duke asserts that the Public Staff's strong opposition is based on over-reliance on traditional ratemaking concepts that ignore the realities of a changing environment and is clearly based on form over substance.

In response to criticisms regarding lack of metrics or standards for evaluating the programs, Duke agrees to commit to an Evaluation, Measurement and Verification analysis of the impact of all segments of the ET Pilots to ensure that the goals of the pilots are met and to engage an expert in how the programs can be evaluated. Duke asserts that its proposal is not simply an effort to seek pre-approval of cost recovery for the investments and expenses that it expects to incur, but it will seek to recover its prudently incurred costs in a general rate proceeding. Finally, given the concerns raised over the size and scope of the proposal, Duke offered to remove the Multi-Family charging stations and the Public L2 charging stations from the pilots, resulting in a decrease of approximately \$4.1 million from the overall cost of the pilots, and indicates a willingness to reduce the rebate for the Residential EV Charging Program from \$1,000 to \$500.

ChargePoint, Sierra Club, Greenlots, NCJC/SACE: In its reply comments, ChargePoint contends that Duke mischaracterizes the current state of the competitive EV charging market and fails to justify taking a direct and substantial state in that market. ChargePoint recommends changes to the ET Pilots to better facilitate the deployment of EV charging infrastructure in the state and better align with best market practices. Sierra Club responded to the Public Staff's criticisms of the ET Pilots and requests Commission approval. Greenlots reiterates its strong support for the ET Pilots and recommends approval. NCJC/SACE recommends modifying and enhancing the ET Pilots based on suggestions by various intervenors.

HEARING

During the hearing, Duke employees Bateman and Reynolds responded to Commission questions and Public Staff questions related to the Commission's questions. Mr. Reynolds stated that there is technology coming out every day and that while Duke has done studies in the past, there is a need for more data, and for utility investment in order support advanced market growth. He also asserted that there are significant differences in data from vehicles on different systems. Ms. Bateman asserted that it is appropriate for the utility to install foundational infrastructure because Duke thinks eventually there will be system benefits for utility customers due to more efficient use of the electric system and there are public policy benefits. She likened the pilots to the job retention rider and the economic development rider, which allowed cross subsidization for public benefits.

Mr. Reynolds stated that Duke is willing to identify specific metrics for each of the programs.

Regarding the relationship between the VW settlement funds and the school bus program, Mr. Reynolds agreed that if a school district applied to participate in the program and also received settlement funds that district would get the full extended rebate up to the full cost of the bus. School districts in Cherokee, Wake County, New Hanover County, and a charter school in Chapel Hill have expressed an interest in the program.

Mr. Reynolds stated that in response to criticism regarding the size of the residential rebate, Duke is willing to reduce it to \$500. The plan is to gather data the first year and perform charge management the second and third years of the residential program. However, the program would allow customers to opt out of managed charging. Experimental tariffs could come at the end of the pilot.

Mr. Reynolds stated that Duke intends to get all of the charging data that will allow Duke to analyze the grid impacts of the programs.

Ms. Bateman stated the for the portions of the program where Duke will be owning and operating the charging station or electric vehicle station equipment, those costs will include the cost of the upgrades to the grid needed to connect the charging stations. However, costs are not included if there were a situation in the DC fast charge program where the charger might be located in a remote area and needed very extensive upgrades. The costs would be capitalized and recovered

through depreciation and a return in base rate proceedings. She estimated the charging stations would have an expected depreciable life of seven years.

Regarding why Duke did not choose to enroll existing EV owners and Duke customers in a pilot to gather data, Mr. Lang responded that the pilot was designed not only to gather data, but to encourage new EV adoption. Mr. Lang stated that they did not choose on-bill financing because research show financial incentives drive customer behavior. Ms. Bateman stated that the utilities have tried to stay away from on-bill financing because there are other lenders and other sources of financing. She stated that the portions of the pilot that are more aimed at encouraging EV adoption are the public charging stations.

Mr. Reynolds responded to a question as to how having school buses spread out over the system will provide useful learning regarding grid resiliency. He stated that Duke needs to understand whether they can provide grid services and if so, how.

Mr. Reynolds admitted that they have data from across the state regarding Duke's EV customers and that they tend to be clustered in the state's larger metropolitan areas. He expects that there will be some amount of balance from a first-come, first-serve process. If Duke were to be required to set aside rebates for populations that might be difficult otherwise to enroll, Duke would need to expand the program.

Ms. Bateman stated that no specific electric vehicle rates have been proposed in Duke's pending general rate cases.

Regarding whether Duke considered whether to offer the infrastructure piece of the pilot through an unregulated subsidiary rather than the utilities, Mr. Reynolds stated that specifically with DC fast chargers, it is well-documented that they are not profitable on a stand-alone basis. Ms. Bateman added that the usage is not enough to make it economical or profitable for an unregulated competitive provider. She stated that once it becomes profitable, then it would make more sense for the unregulated competitive market to take over.

Ms. Bateman asserted that to the extent Duke could encourage off-peak charging, more kilowatt hours could be added to the system without increasing the fixed demand costs. She admitted that technology risk (i.e. that the stations will become obsolete) will be borne by ratepayers, but Duke has some degree of confidence that they will be used and useful for the seven-year period they would depreciate them, though Duke could not guarantee that there would not be new technology that would come up within that seven-year period. She stated that Duke has not analyzed recouping its investments in EV through an additional charge to EV owners either through tariff or a fixed charge.

When asked about a make-ready program instead of the pilot proposed, Ms. Bateman estimated that the cost of the program would still be around \$41 to \$64 million.

When asked whether Duke considered offering incentives to install chargers, Mr. Reynolds stated that providing an incentive for a portion of the cost by definition would reduce the cost of the program. However, Duke feels like the

nature of the DC fast charge market and the fact that it is very expensive to install the stations and the economics are not quite there yet on the operating side.

Ms. Bateman stated that the residential rebates would be considered to be an operations and maintenance expense and would be included in rate case test year expenses.

Mr. Reynolds and Ms. Bateman responded to several questions from the Public Staff. Regarding the design of the EV specific rates, Mr. Reynolds stated that in Oregon where mandatory EV time of use rates were mandatory, customers were not willing to participate because the value customers were getting was not in proportion to the rate discount. Mr. Reynolds stated that the pilots proposed in South Carolina are in the \$15.6 million range, which was an amended amount after a stakeholder process. Mr. Bateman admitted that Duke operates as a system and then Duke allocates certain costs to each jurisdiction and other costs are direct assigned. Ms. Bateman could not say when the EV charging market would be profitable. Mr. Reynolds stated that Duke doesn't anticipate that at the end of the three year pilot that it might be profitable such that the Company would not need to install any further infrastructure.

Regarding the programs in other states listed on page 6 of the Application, Mr. Reynolds stated that the Florida program arose out a negotiated rate case and is a five-year, \$10 million program.

Ms. Bateman asserted that Duke would like some direction from the Commission as to whether the investment is proper and is not unlike a CPCN

application, which does not guarantee cost recovery. The prudence of the costs would still be subject to review in a general rate case.

In response to a question from Duke's attorney regarding rate impacts, Ms. Bateman stated that on average for residential customers the cost of the programs would be about \$0.15 per 1,000 kWh during 2021-2025. She compared that cost to the job retention rider of \$0.40 to \$0.50 per 1,000 kWh.

Mr. Reynolds agreed that the goal in Executive Order 80 of 80,000 zero emission vehicles in the state by 2025 is an ambitious goal and that the pilot is consistent with the goal.

COMMISSION FINDINGS AND CONCLUSIONS

The Commission finds that Duke's application for approval of the ET Pilots is not a proof-of-concept pilot program and should not be approved as currently proposed. While there is no hard-and-fast rule regarding what constitutes a pilot program, the Commission has historically considered a number of factors when evaluating proposed pilot projects. A pilot project is designed to evaluate a concept at small scale to determine the operational and economic viability of the concept if implemented at a larger scale, such as across the utility system. It necessarily follows that for a pilot project to truly be considered a pilot, there must be some possibility that the small-scale project never proceeds to a larger scale.

A pilot project must define up front what success looks like. In other words, how will the utility and Commission determine whether the concept should be replicated at a larger scale in an operationally and economically viable manner?

This inquiry necessarily requires pre-defined objectives, plus a framework of metrics for measuring whether those objectives are achieved. The metric results and lessons learned must be capable of being reported to the Commission.

The Commission has recently discussed the importance of evaluation and measurement for pilot programs. In our Order Granting Certificate of Public Convenience and Necessity with Conditions, *Application of Duke Energy Progress, LLC for a Certificate of Public Convenience and Necessity to Construct a Microgrid Solar and Battery Storage Facility in Madison County, North Carolina*, No. E-2 Sub 1185 (N.C.U.C. May 10, 2019), we noted that “[t]he ancillary service benefits associated with the battery storage system – frequency and voltage regulation and ramping support – cannot be accurately quantified without actual operation data gained from experience and meticulous data collection analysis. Operation of the Hot Springs Microgrid will provide valuable operational experience as battery storage and solar technologies continue to develop and evolve.” To this end, the Commission ordered DEP to undertake reporting requirements that “formalize and provide its operational and learning goals in a transparent and comprehensive plan, showing how it will achieve such goals.” *Id.* at 13.

The Commission finds that Duke has failed to propose metrics and standards for determining whether Duke’s ET Pilots are successful and should be replicated on a larger scale. Duke’s commitment to submit the programs to an EMV analysis lacks in specificity and does not provide the Commission a basis for approving the ET Pilots at this time. The commitment also fails to provide assurance that appropriate metrics or standards will be set in advance so that the

Commission and third parties will know whether the programs are successful. A well-designed pilot program must contain clear, transparent, measurable metrics for evaluating success, or failure, in the original application, which then facilitates a decision to be made on whether to implement the concept on a broader scale.

Additionally, Duke admits that the ET Pilots are fundamentally designed to promote EV adoption and install a foundational level of EV infrastructure, not just to collect data. In both comments and during the hearing, Duke stated that it believes such investment is needed to “jumpstart” the EV market. However, during the hearing, Duke employees Bateman and Lang stated that Duke does not know whether the expenditures over the three-year pilot will be sufficient such that no further infrastructure spending will be necessary. Further, Ms. Bateman stated that Duke cannot provide assurance that the infrastructure it proposes to install will not be obsolete before it is fully depreciated. *Tr. Vol. 1, 59, 90-91*. As the purpose of a pilot program is to determine whether or not a concept should be replicated at larger scale, the possibility that the ET Pilots may preclude the need for additional infrastructure spending raises concerns with respect to scope and scale. A proposal that addresses a substantial portion of statewide infrastructure needs renders the proposal more like preapproval of infrastructure spending rather than a group of pilot projects.

When viewed in that light, the Commission finds that Duke’s request for preapproval of infrastructure spending is distinct from the CPCN or DSM/EE program approval process and cost recovery. A CPCN is granted only when an applicant demonstrates that there is an identified, demonstrated need and that the

resource chosen is the most reasonable, cost-effective resource available. With respect to DSM/EE programs, again, a utility must demonstrate that a program is cost effective. Here, Duke readily admits that the EV programs, and particularly the charging station programs, are not economical or cost effective, arguing that Duke must “jumpstart” the market. While Duke is obligated to serve load reliably and safely, it has no such obligation to “jumpstart” the EV market at ratepayer expense.²⁴ Further, if the Commission were to grant Duke’s request, because the infrastructure buildout is not low cost or cost effective, a review of the reasonableness and prudence of costs would be essentially meaningless. The Commission would be left with determining only whether Duke spent the money on what it projected it would spend it on.

The Commission notes there is nothing to preclude Duke from making EV investments across its system at the level it proposes in the ET Pilots and seeking cost recovery through a general rate case. To the extent Duke believes it appropriate to help “jumpstart” the EV market, it can make infrastructure investments and allow them be evaluated using traditional and statutory “reasonable and prudent” and “used and useful” ratemaking principles. While the possibility exists Duke could be denied recovery of some or all of this investment, this approach more appropriately places the investment risk on Duke rather than ratepayers. Additionally, Duke can make these same investments through one of its unregulated entities to the extent “jumpstarting” is needed. Pursuing such

²⁴ Duke’s comparison of the rate impacts of the EV pilots with the job retention rider is inapposite. The job retention rider was approved for one year and has been discontinued; the cost of the EV pilots would continue for at least five years, and would potentially continue and increase should Duke propose to extend the programs.

investments through an unregulated entity allows the market to drive investment decisions and eliminates the risk to ratepayers.

The Commission finds that the ET Pilots do not establish a need for much of the data sought by Duke nor do they establish a cost-effective framework for obtaining the data that Duke purportedly needs. The ET Pilots are very similar to other pilots currently underway across the country, and are virtually identical to the much less costly pilots proposed by Duke (but not yet approved) in South Carolina. Duke admits the proposals are based on estimated data and are designed to promote EV adoption and install a foundational level of EV infrastructure. Nevertheless, even in the Residential and Fleet EV Charging programs, Duke proposed no experimental rate designs to evaluate the extent to which various rate designs impact customer charging behavior or facilitate managed charging in a manner to promote EV adoption. Rate designs to manage charging can significantly impact EV adoption, improve service to EVs, mitigate grid impacts, and better enable assignment of full cost of service to those using EV infrastructure. Further, if the goal of the pilot is to gather data, Duke could enlist current customers to participate in a smaller, much more cost-effective program.

The Commission further finds that the remainder of the proposed programs cannot be characterized as pilot programs. The EV School Bus and EV Transit Bus programs are not reflective of programs that would be offered by Duke in the ordinary course of business, i.e., providing electric service. The Department of Public Instruction, school systems, and municipalities are responsible for purchasing buses for their respective systems; there is no justifiable reason why

Duke should insert themselves into the process or why Duke's customers should pay to purchase buses. Bus systems have predictable routes and schedules; thus, determining the charging characteristics of buses is easily modeled, if not already available. To the extent Duke is interested in exploring the use of small scale batteries to provide support to the grid during summers (school buses) or overnight (transit buses), that data can be easily obtained by directly deploying small scale batteries within Duke's systems. Additionally, the various public charging station programs are merely capital projects for which Duke seeks preapproval that would add rate base that has not been demonstrated to be cost effective. The Commission is unable identify unique learning opportunities arising out of the construction of over 400 public charging stations across the State or otherwise justify approval of this program, especially given the cost.

Though the Commission concludes in this Order that Duke's proposal should not be approved, the Commission recognizes that Duke should undertake activities to prepare to serve EV load. To that end, Duke is encouraged to design and submit new electric transportation pilots that are narrower in scale and scope and adhere to the principles articulated in this Order. Any new proposal should clearly describe both the scale at which the concept is tested versus the scale at which it could be deployed. Objectives and metrics should be developed contemporaneously with the program that allow Duke and the Commission to determine whether the concept should be replicated at a larger scale, such as within a region or across the DEP or DEC systems. Any pilot should be designed to collect new, unique information that is not readily available within Duke, Duke's

affiliate entities, or industry as a whole, along with a plan to operationalize its learning experience. A pilot should further demonstrate that it is the most cost-effective means for acquiring financial and operational data sought by Duke. Finally, a pilot should contain clear and transparent reporting requirements to inform the Commission and other interested parties of the pilot's process on an ongoing basis.

Based on the foregoing, Duke has failed to demonstrate that spending \$76 million over a three-year period is necessary to learn more about serving current and future EV load in North Carolina. For these reasons, the Commission denies Duke's requests for approval of their respective EV pilots. This denial is without prejudice as to a future filing in which Duke presents EV pilots that would be much smaller in scale, that would provide information not available from other studies, and that would include experimental tariffs, rate designs, and specific metrics to measure the success of the pilots as more fully discussed in this Order.

IT IS, THEREFORE, SO ORDERED.

ISSUED BY ORDER OF THE COMMISSION.

This the ____ day of _____, 2020.

NORTH CAROLINA UTILITIES COMMISSION

Kimberley A. Campbell, Chief Clerk