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For the Using and Consuming Public:

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BY THE COMMISSION: On March 29, 2019, Duke Energy Carolinas, LLC (DEC), and Duke Energy Progress, LLC (DEP; collectively, Duke or the Companies), filed an application in the above-captioned dockets pursuant to N.C. Gen. Stat. § 62-140 and various Commission rules requesting approval of Duke's proposed electric transportation pilot (ET Pilot).

On April 4, 2019, the Commission issued an order requesting comments and reply comments on Duke's proposal. Petitions to intervene were filed by and granted 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 jointly Southern Alliance for Clean Energy and the North Carolina Justice Center (SACE/NCJC). The intervention and participation by the Public Staff is recognized pursuant to N.C.G.S. § 62-15(d) and Commission Rule R1-19(e).

On or before July 5, 2019, initial comments were filed by NCCEBA, SACE/NCJC, ChargePoint, EDF, Greenlots, NCSEA, Sierra Club, and the Public Staff. Reply comments were filed by Duke, EDF, ChargePoint, Greenlots, SACE/NCJC, and Sierra Club. In addition, the Commission received over 30 consumer statements of position, most of which expressed support for the proposed ET Pilot.

By orders issued October 25, 2019 and November 1, 2019, the Commission scheduled a hearing in this matter and notified parties of the topics to be addressed. On November 21, 2019, the Commission held a hearing to obtain additional information on the public interest and ratemaking implications of Duke's proposed ET Pilot.

On December 17, 2019, the Commission issued an order requesting proposed orders from the parties. On February 28, 2020, proposed orders were filed by Duke, the Public Staff, Greenlots, and jointly by SACE, NCJC, EDF, and Sierra Club. In addition, Duke and ChargePoint filed a Settlement Agreement.

On April 24, 2020, Greenlots filed a motion requesting that the Commission allow parties to file comments and reply comments on the Settlement Agreement.

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<sup>1</sup> Ms. Downey was subsequently named Chief Counsel of the Public Staff.

On May 5, 2020, ChargePoint and Duke filed separate responses in opposition to Greenlots' motion.

On June 3, 2020, the Commission issued an order denying Greenlots's motion to allow comments and reply comments on the Settlement Agreement.

### **SUMMARY OF APPLICATION**

Duke states that in 2011 the Commission first approved DEC's request to conduct a plug-in electric vehicle (EV) charging station load research study pursuant to which DEC provided EV charging stations with up to \$1,000 of installation fees to 150 residential customers who bought or leased a plug-in EV in DEC's service area. Order Approving Study, *Application by Duke Energy Carolinas, LLC, for Approval of Proposed Study on the Impact of Charging Plug-in Electric Vehicles on the Grid*, No. E-7, Sub 969, (N.C.U.C. Mar. 22, 2011). DEC initiated the study with the objective of collecting data about its customers' EV charging behaviors for a two-year period to better understand the impact that charging EVs would have on power demand, transformers, cabling, and other infrastructure. By the conclusion of the study period, explains Duke, DEC had developed a baseline understanding of residential customer light-duty EV charging behavior, average energy consumption of EV charging, and average purchase and installation costs of early market electric vehicle supply equipment (EVSE). Duke further states that since the conclusion of the study the EV market has grown and evolved as more EV models have become available. Duke posits that EV adoption has occurred at more than twice the rate of traditional hybrids and that the EV market in North Carolina has increased significantly, with a compound annual growth rate of 39% since 2011. Further, Duke notes that in 2017, 2,055 passenger EVs were registered in North Carolina, and in August 2018, EVs made up 1.1% of North Carolina's light-duty vehicle market. Additionally, Duke explains, EV technology has advanced significantly since DEC conducted the initial study. For example, EVs now contain larger batteries, charge at higher power levels, and have expanded to multiple market segments not previously offered. Duke notes that forecasts indicate the future adoption of passenger EVs in North Carolina will range from 3% to 8% of light-duty vehicle stock by 2025, depending on several influencing factors, including: a) vehicle availability, b) infrastructure availability, and c) state and local EV policies.

Duke takes the position that more investment in EV charging infrastructure will accelerate EV adoption in the state, consistent with the intent of certain state policies, such as those set forth in Executive Order No. 80 issued by Governor Roy Cooper on October 29, 2018 (EO 80), as well as with the fast-developing EV market. To that end, Duke has conducted research to demonstrate the potential benefits to the electric system and to customers of increased EV adoption and the potential for utility-managed charging to enhance those benefits. Duke explains that it designed the proposed ET Pilot to determine best practices for realizing significant potential benefits of increased electric transportation adoption in North Carolina, including the long-term potential for downward rate pressure, retaining fuel cost savings in North Carolina, reducing vehicle emissions, and improving air quality.

## **Description of the ET Pilot**

The ET Pilot consists of seven programs to be in effect over a three-year period addressing three areas of concern: EV charging management, transit electrification, and public charging expansion. For EV charging management, Duke proposes the residential EV charging program and the fleet EV charging program. For transit electrification, Duke proposes the EV school bus charging program and the EV transit bus charging program. For public charging expansion, Duke proposes the multifamily dwelling charging station program, the public Level 2 charging station program, and the direct current fast charging station program. Duke attached proposed tariffs for each of the programs to its application.

### ***EV Charging Management***

- *Residential EV Charging:* Designed to evaluate whether providing a rebate to support the installation of EVSE encourages EV adoption and to establish procedures to determine the value and viability of utility-managed charging. The program provides a rebate of \$1,000 for up to 500 DEC and 300 DEP residential customers in exchange for participation in the program, which will include transmission of charging load data to the utility as well as utility management of home charging during defined hours.
- *Fleet EV Charging:* Designed to support the installation of EVSE for public and private entity fleets, to encourage the use of EV fleets, and to collect utilization characteristics of EV fleet charging behavior for a variety of EV types and weight classes to better understand potential grid and utility impacts of this EV market segment. The program provides a \$2,500 rebate to commercial and industrial customers that operate fleet vehicles. Participating customers must install all EVSE behind a separate meter taking service on an available commercial time-of-use (TOU) rate. DEC will offer no more than 500 total EVSE rebates, and DEP will offer no more than 400 total EVSE rebates.

### ***Transit Electrification***

- *EV School Bus Charging:* Designed to facilitate the replacement of older diesel school buses with zero-emission school buses in public school transportation systems, the installation of EVSE to facilitate market adoption, and the collection of data on utilization and other load characteristics to understand grid and utility impacts and explore the potential for bidirectional power flow from EV school bus (EVSBS) batteries. Under this program DEC and DEP seek to aid in the deployment of approximately 55 and 30 electric school buses, respectively, by funding up to \$215,000 per bus on a first-come, first-served basis to school districts willing to purchase an electric school bus with bidirectional power flow capabilities. Participating customers will allow access to all vehicle charging data and perform testing of charging load management and bidirectional charging capabilities. By testing the bidirectional capabilities of an EVSB, the school bus battery will operate as a grid asset, and Duke will

retain the right to repurpose the EVSB battery after its useful vehicle life as a second-life storage asset.

- *EV Transit Bus Charging*: Designed to support EV transit bus (EVTB) adoption and to collect data on utilization and other load characteristics to understand potential grid and utility impacts. DEP and DEC will install and own qualifying EVSE selected by the transit agency. In DEC 60 stations would be eligible for funding, and in DEP 45 stations would be eligible for funding.

### **Public Charging Expansion**

- *Multifamily Dwelling Charging*: Designed to provide access to residential charging for residents of multifamily dwellings. DEC and DEP will install, own, and operate Level 2 (L2) EVSE and collect a charging fee based on the marginal energy component of the applicable utility's currently approved Small General Service schedule, plus \$0.02/kilowatt-hour (kWh) to cover network platform and transaction fees. Duke proposes to deploy 100 stations in DEC's service territory and 60 stations in DEP's. DEC and DEP will offer multiple brands of EVSE hardware from which the site host can select.
- *Public Level 2 Charging*: Designed to provide a base level of destination charging for drivers in DEC's and DEP's service territories. DEC and DEP will install, own, and operate L2 EVSE and collect a charging fee based on the marginal energy component of the applicable utility's currently approved Small General Service schedule, plus \$0.02/kWh to cover network platform and transaction fees. Duke proposes to deploy 100 stations in DEC's service territory and 60 stations in DEP's.
- *Direct Current Fast Charging (DCFC)*: Designed to deploy a foundational level of fast charging infrastructure to facilitate long-distance travel throughout the service territories. DEC intends to install, own, and operate a network of up to 70 fast chargers across approximately 35 individual locations in its service territory, and DEP intends to install, own, and operate a network of up to 50 fast chargers across approximately 25 individual locations in its service territory. Stations will include charging equipment with electrical demand requirements of 100 kW or greater.

### **Program Costs**

Over the proposed three years of the Pilot, DEC's estimated cost for the ET Pilot is \$45,580,250, and DEP's estimated cost is \$30,438,250. Duke provided the following cost breakdown per utility, per program.

	<b>DEC</b>	<b>DEP</b>
Residential Rebate	\$1,175,000	\$705,000
C&I Fleet Rebate	\$1,925,000	\$1,540,000
EV School Bus	\$11,981,750	\$6,535,500
EV Transit Bus	\$4,671,000	\$3,503,250
Multifamily L2	\$1,285,000	\$771,000
Public L2	\$1,285,000	\$771,000
DC Fast Charge Network	\$20,107,500	\$14,362,500
Education and Outreach	\$2,025,000	\$1,350,000
Ongoing O&M	\$1,125,000	\$900,000
Utility Total	\$45,580,250	\$30,438,250
<b>Combined Total</b>		<b>\$76,018,500</b>

Although the application does not seek cost recovery for the ET Pilot, the Companies state that DEC and DEP intend to seek to recover the costs of the ET Pilot programs through their respective base rates.

## **SUMMARY OF COMMENTS, TESTIMONY, AND SETTLEMENT**

### **Initial Comments**

#### ***Public Staff***

The Public Staff conducted a detailed investigation of the application and DEC's and DEP's responses to numerous data requests, as well as a review of pilot programs of other electric utilities and discussions with other stakeholders and state agencies from in and outside North Carolina. As a result of this investigation the Public Staff concludes that the proposed ET Pilot does not meet the parameters of a pilot in which DEC and DEP would undertake a proof-of-concept through a scalable project. The Public Staff concludes that DEC and DEP have failed to demonstrate that the estimated cost of the ET Pilot is necessary to learn more about serving current and future EV load. The Public Staff notes that the Companies and their affiliates have conducted similar programs both in North Carolina and in other jurisdictions, and the Public Staff takes the position that DEC and DEP have provided no evidence demonstrating that North Carolina customers are sufficiently unique to justify another pilot program or that the results of previous or ongoing pilot projects and other publicly available industry data are insufficient to meet Duke's needs. The Public Staff takes the position that DEC and DEP are requesting preapproval of infrastructure investments associated with electric transportation that would be funded by customers and notes that absent a certification requirement, the Commission generally does not preapprove utility capital investments. Ultimately, the Public Staff recommends that the Commission deny the application.

With respect to the scope of the ET Pilot, the Public Staff takes the position that the ET Pilot is designed to obtain infrastructure-related data that is likely already publicly

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, the Public Staff notes that because EV-related loads are not weather sensitive, load shapes experienced by other utilities (residential and nonresidential) should be indicative of the load shapes of North Carolina consumers. The Public Staff concludes that there is no reason to believe that the 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 Carolina. In short, the Public Staff concludes that there is no reason to duplicate those efforts here by approving the ET Pilot.

The Public Staff suggests that 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 such a finding. The Public Staff notes that while the Residential EV Charging program would evaluate active managed charging via onboard load control capabilities in the second year, the program does not evaluate passive managed charging through experimental rate designs and other mechanisms. The Public Staff notes that any pilot project should explore the vast array of mechanisms to determine what drives, and does not drive, customer behavior. The Public Staff notes that the Fleet EV Charging program is similarly lacking in experimental rate designs and that the inclusion of various experimental rate designs and other mechanisms would render these programs more characteristic of a pilot.

The Public Staff takes the position that the various public charging station programs are merely capital projects and that no unique learning opportunities arise out of the construction of charging stations across the state, especially given the cost.

With respect to evaluation and metrics, the Public Staff notes 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. A pilot must have clearly defined objectives and goals that would define success (or failure) and justify (or not) a broader, permanent program. The Public Staff concludes that the ET Pilot contains no objectives, metrics, goals, or other means of evaluating whether the programs are a success or failure.

With respect to the cost-benefit analysis filed by DEC and DEP in support of the application, the Public Staff notes the similarity to other cost-benefit studies conducted by the same author for other utilities in other jurisdictions, including Duke Energy Florida, LLC (DEF). Overall, the Public Staff believes these studies to be reasonable attempts at quantifying the benefits and costs of EV adoption at various levels in a general sense. However, the Public Staff identifies several concerns with the study, including the use of a more carbon-intensive generation portfolio than DEC and DEP anticipate in their IRPs when estimating typical emissions per kWh of electricity as well as the high degree of uncertainty in the projections of EV penetration beyond 2025. Ultimately, the Public Staff takes the position that the Commission should give limited weight to the study. The Public

Staff points out, though, that the cost-benefit analysis was not intended to provide a template for a cost-benefit analysis for each of the individual programs in the ET Pilot and that DEC and DEP have not conducted cost-benefit analyses for the individual programs. The Public Staff notes that individual program cost-benefit analyses should be performed to ensure that spending on any individual program is cost-beneficial.

## **NCSEA**

NCSEA supports the deployment of EVs and charging infrastructure but cautions that such investment should be made in a way that supports all market participants. NCSEA requests that the Commission open a stand-alone proceeding to examine the issue and determine the goals of deploying EV charging infrastructure. NCSEA further requests that the Commission deny the Companies' petition to make capital investments for EV infrastructure and, instead, direct Duke to develop and propose an EV "make-ready" program.

NCSEA disagrees with the Companies' assertion that the ET Pilot would allow the Companies to install a foundational level of charging stations in North Carolina and states that through data requests Duke provided conflicting information on whether the Companies will be providing a significant number of the total stations needed to support EV demand and the goals of EO 80. According to NCSEA, this results from Duke's confusing plugs with stations, ignoring already expanding EV infrastructure in the state, and excluding Tesla stations from its analysis, all of which NCSEA deems improper. NCSEA opines that through the ET Pilot the Companies will serve roughly two-thirds of the EV market.

NCSEA expresses concerns that Duke's knowledge of the grid is more problematic than the Companies acknowledge with respect to the development of the market. Rather than using Customer Site Investigations, NCSEA argues that the Companies should not proceed with the ET Pilot until they can more economically evaluate potential sites using integrated distribution planning or hosting capacity maps. Further, NCSEA is concerned that the Companies' knowledge of the grid could be used to monopolize the market for EV infrastructure. Essentially, NCSEA believes that the Companies' knowledge of where expensive upgrades would be required would cause Duke not to use those sites and to leave the expensive sites for potential competitors.

NCSEA also questions the Companies' focus on the DCFC market as opposed to Level 2 plugs and hybrid gas/electric vehicles. NCSEA states that the DCFC plugs are not currently compatible with demand-side management methods like Level 2 plugs and could increase load, which would require more peaking generation capacity.

NCSEA agrees with the Companies' goal to provide underserved communities with access to charging stations but questions whether the Companies' proposal facilitates the achievement of that commitment.

NCSEA disagrees with the Companies' proposal to recover some of its EV costs through base rates while competing providers will have to rely solely on their EV customers. NCSEA argues that this proposal amounts to prohibited single-issue ratemaking outside the context of a general rate case. NCSEA advocates for a make-ready program in which the Companies would provide infrastructure to the point where a charging station could be installed by another provider. NCSEA argues this would be consistent with the Companies' line extension policies approved by the Commission.

NCSEA is not opposed to the rebates in the Companies' proposal but requests that the rebates be decreased from \$1,000 to \$500. As to rate design, NCSEA opposes the Companies' proposed TOU rate and suggests the Companies should develop EV-specific tariffs including no demand charge, a fixed charge relating to customer-specific costs, and a time-varying energy rate.

NCSEA opposes the first-come, first-served basis of the EV School Bus and EV Transit Bus programs, arguing that would benefit wealthier counties and cities that would use up the rebates before poorer areas are able to participate. NCSEA suggests that the Commission implement some "scoring criteria" to ensure the rebates are given equitably across the state.

Lastly, NCSEA asks the Commission to require the Companies to hire a third party to market the program and increase reporting to the Commission.

### **NCCEBA**

NCCEBA opposes the proposed ET Pilot, taking the position that the proposal will have a substantial and deleterious effect on the EV charging market in North Carolina. NCCEBA asserts that the Companies' entry into the market will create an encroachment of monopoly activity into a growing competitive market. Further, NCCEBA states that the Companies will control 25% of Level 2 charging stations and 50% of DCFC stations. NCCEBA also disagrees with the Companies' view of the EV market and takes the position that the EV market is currently expanding quickly enough to meet market needs.

### **SACE/NCJC**

SACE/NCJC generally support the Companies' proposed ET Pilot, recognizing many positive impacts of EVs, including lower cost, downward pressure on electric rates, and environmental benefits. SACE/NCJC also note impediments to EV adoption, including costs of EVs and general lack of knowledge. SACE/NCJC suggest the following modifications to the ET Pilot: 1) strengthen the reporting requirements to require quarterly reports and concrete details to enable analysis; 2) establish a stakeholder advisory council to help the Commission oversee aspects of the ET Pilot; 3) allocate a certain number of EV charging stations to disadvantaged communities; 4) increase funding for EVSB and EVTB in lower-income school districts and communities; and 5) develop EV rates to send clear price signals to customers to encourage charging during off-peak

times of day, reducing the costs of charging EVs and reducing the need for new load to meet demand.

Finally, SACE/NCJC state that utilities have an important role to play in the emerging EV market. However, the organizations support a competitive market for charging infrastructure and may not support utility ownership and operation of EV charging stations in the future.

### ***Greenlots***

Greenlots supports the ET Pilot and encourages the Commission to approve the ET Pilot as proposed. Greenlots opines that the proposal is an example of needed, prudent, and targeted utility investment that will have a significant impact in accelerating the growth of the EV market and meeting the greenhouse emission goals of EO 80. According to Greenlots, EV adoption faces several impediments in the state, including a lack of fast charging stations and general charging infrastructure, mostly notably public charging stations, and that this leads to a lack of adoption due to what Greenlots called “range anxiety.” Greenlots also lists a number of benefits to be derived from EV deployment, including cost savings, as well as improvements in the environment, general health, energy security, and grid resilience. Greenlots expresses disappointment that the proposal is only pilot scale and not program scale.

In addition, Greenlots does not agree that the ET Pilot will hinder the development of a competitive market. Rather, Greenlots contends that the ET Pilot will support the growth of the competitive market by growing the EV market as a whole and, therefore, increasing the demand for additional charging stations in the marketplace. Moreover, Greenlots states that drivers adopt EV technology due to the availability of charging stations, not necessarily the number of different providers and price.

### ***EDF***

EDF expresses support for the ET Pilot and the Companies’ commitment to expanding the EV market as outlined in EO 80. EDF suggests several changes to the programs included in the ET Pilot, as follows: 1) the inclusion of on-bill financing for the purchase of EVSB and EVTB in which financing of those buses would be included on the transit agency or the school district’s bill; 2) the inclusion of bill protection to protect participants from potentially dramatic and unexpected higher demand charges from higher usage that could move the customer into a higher rate class; 3) multiple rate designs, including those that incentivize charging during off-peak periods, and tariffs that are volumetric and offer different structures that include a demand charge; and 4) the establishment of a working group to further study how to remove barriers to EV adoption.

### ***Sierra Club***

Sierra Club expresses general support for the ET Pilot but suggests the following modifications: 1) the Companies should clarify their data collection plan, issue quarterly

reports, and establish a stakeholder advisory process; 2) the Companies should use data from the residential EV charging program to develop EV-specific TOU rates; 3) the Companies should clarify the types of vehicles eligible for the program and whether single entities can receive multiple rebates; 4) the Companies should evaluate options to incentivize off-peak charging for multifamily dwelling units; 5) the Companies should report prices charged to EV drivers at DCFC locations and co-locate DCFC stations with Level 2 stations; and 6) the Companies should develop additional solutions for clean transportation access for low- and moderate-income communities.

### ***ChargePoint***

ChargePoint opposes certain components of the ET Pilot and takes the position that several components will delay the development of a long-term, sustainable competitive market. ChargePoint outlines three models for utility investment in EV infrastructure: 1) ownership by the utility; 2) make-ready; and 3) rebate-based. ChargePoint contends that the focus of utility investment should be to foster and support the existing competitive market, spur EV adoption, and support further development of the competitive market. According to ChargePoint, the Commission should consider the variety of technologies available, the degree to which site hosts can make choices about operating, and the impact of spurring private investment alongside utility customer funds.

ChargePoint further maintains that the lack of choice for participating customers among EV charging networks and not allowing participating customers to operate EV charging stations on their own property would adversely impact the existing competitive EV charging market. It agrees that an increase in EV charging infrastructure is needed but opines that such does not require the utility to bypass the existing market and local site hosts by owning and operating the charging stations. ChargePoint asserts that the ET Pilot would allow Duke to position itself to occupy a substantial position in the developing EV charging market, particularly with the DCFC program.

ChargePoint advocates for certain amendments to the ET Pilot programs, including using multiple charging networks and equipment vendors to reinforce competition and provide consumer choice and enabling site hosts under all offerings to operate charging stations and determine prices to drivers. Finally, ChargePoint advocates for the Commission to consider alternative utility investment models such as rebates and make-ready programs.

### **Reply Comments**

#### ***Duke***

Duke focuses its reply comments on the following: 1) the alignment of the ET Pilot with EO 80, 2) the broad support of the pilot 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 opposition is based on overreliance on traditional ratemaking concepts that ignores the realities of a changing environment and is 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 (EM&V) analysis of the impact of all segments of the ET Pilot to ensure that the goals of the pilot 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 preapproval of cost recovery for the investments and expenses that it expects to incur but acknowledges that it will seek to recover its prudently incurred costs in a general rate case proceeding. Finally, given the concerns raised over the size and scope of the proposal, Duke offers to remove the multifamily charging stations and the public L2 charging stations from the ET Pilot, resulting in a decrease of approximately \$4.1 million from the overall cost, and indicates a willingness to reduce the rebate for the Residential EV Charging Program from \$1,000 to \$500.

### ***SACE/NCJC***

SACE/NCJC reiterate their support for the ET Pilot with their previously requested modifications. They also disagree with the Public Staff that sufficient information will be publicly available without the ET Pilot and opine that information made available from the experience of other jurisdictions or other publicly available information will not be tailored to the Companies' customers and service territory. Finally, SACE/NCJC take the position that an independent EM&V process should be required and included in the cost of the ET Pilot.

### ***Sierra Club***

Sierra Club disagrees with the Public Staff's position that the ET Pilot is unnecessary because publicly available data either exists or will exist and contends that there are state-specific variations in the EV market, housing stock, customer demand, and utility operations. In addition, Sierra Club questions the Public Staff's position that other states that have initiated pilots will provide enough information for North Carolina's needs. Indeed, Sierra Club contends that the opposite is true and that the number of states initiating pilots shows the necessity of state-specific data. Finally, Sierra Club reiterates its recommendation for increased reporting of information.

### ***ChargePoint***

ChargePoint agrees with the positions stated by the Public Staff, NCSEA, and NCCEBA. Moreover, ChargePoint notes that SACE/NCJC admit that the ET Pilot would give the Companies a substantial stake in the EV charging market, including owning a majority of the DCFC stations.

## **Greenlots**

Greenlots repeats its strong support for the ET Pilot, without delay, contending delaying or not providing drivers with these resources and more charging options would actually compound the fragile market conditions that parties advocating for delay critique. According to Greenlots, the private EV charging marketplace alone cannot adequately meet North Carolina's transportation electrification and emissions goals, let alone achieve market transformation or maximize future growth and associated benefits. In addition, Greenlots opines that there is a market void stemming largely from the fact that private equity funded development often requires rapid and high returns on investment that can be at odds with capital investments such as public EVSE. Additionally, Greenlots states that private market EVSE development and utility EVSE development is not a zero-sum game, as there can be an additive nature of utility investment. Greenlots encourages Duke and the Commission to consider ways in which the ET Pilot can be enhanced to incorporate and evaluate smart charging and other load management strategies.

## **Hearing**

On November 21, 2019, the Commission held a hearing to obtain additional information on the public interest and ratemaking implications of Duke's proposed ET Pilot. For Duke, Lang Reynolds, Director of Electric Transportation, and Laura Bateman, Director of Carolina's Rates and Regulatory Strategy Group, appeared as a panel to respond to questions from the Commission.

Witness Reynolds stated that new technology is 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 to support advanced market growth. He also asserted that there are significant differences in data from vehicles on different systems. Witness Bateman asserted that it is appropriate for the utility to install foundational infrastructure because there eventually 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 pilot to the job retention and economic development riders, which allow cross-subsidization for public benefits.

Regarding the relationship between the Volkswagen settlement funds and the EV school bus program, witness 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.

Witness Reynolds stated in response to criticism regarding the size of the residential rebate that Duke is willing to reduce the rebate to \$500. Duke's 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. Witness Reynolds stated that Duke intends to use the charging data to analyze the grid impacts of the programs.

Witness Bateman stated that for the portions of the pilot where Duke will be owning and operating the charging station or EVSE, 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 DCFC program where the charger might be located in a remote area and needed very extensive upgrades. Those costs would be capitalized and recovered through depreciation and return in base rates. 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, witness Reynolds responded that the pilot was designed not only to gather data but to encourage new EV adoption. Witness Reynolds stated that Duke did not choose on-bill financing because research shows financial incentives drive customer behavior. Witness Bateman stated that the utilities have tried to stay away from on-bill financing because of the existence of lenders and other sources of financing separate and distinct from the utility.

Witness Reynolds responded to a question regarding how having school buses spread out over the system will provide useful learning regarding grid resiliency. He stated that Duke needs to understand whether it can provide grid services and, if so, how. Witness Reynolds admitted that Duke has data from across the state regarding its 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-served 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.

Regarding whether Duke considered providing the infrastructure piece of the pilot through an unregulated subsidiary rather than the utilities, witness Reynolds stated that with the fast chargers, specifically, it is well-documented that they are not profitable on a stand-alone basis. Witness 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.

Witness Bateman explained that the pilot provides numerous benefits for all customers, including customers that do not have EVs, such as environmental benefits. She further explained how EV adoption could lower the cost per kWh usage for all DEC and DEP customers. She noted that if the Companies were able to encourage off-peak charging, then there would be additional kilowatt-hours over which to spread fixed costs. This would result in a lower cost per kWh for all customers on the system.

When asked about the make-ready concept set forth by some intervenors, witness Reynolds indicated that the Companies already require commercial DCFC stations to pay some contributions in aid of construction and that, practically speaking, the utility is already socializing the majority of the cost on the utility side of the meter. Witness Reynolds indicated that Duke is proposing to own and operate the DCFC stations to ensure that the stations are well maintained and operable for the full life of the asset. With

a make-ready program the utility puts in the make-ready infrastructure and has no recourse afterwards to ensure the station is useful or in good shape. Witness Bateman indicated that if the ET Pilot were limited to a make-ready program, the costs would still range from \$41 to \$64 million.

On questions from the Public Staff, witness Reynolds stated that the costs of the pilot are proportional in size to pilots in other states, such as South Carolina. Additionally, with respect to the Public Staff's comparison of the costs of Duke's North Carolina ET Pilot with DEF's ET program in Florida, witness Reynolds clarified that DEF is a single utility operating in a smaller area in Florida, whereas North Carolina has a larger area with two utilities participating in the ET Pilot.

With regard to a question from the Public Staff concerning whether the Company appeared to be asking for preapproval of infrastructure, witness Bateman answered that with a program of this significance, Duke needs direction from the Commission as to whether this foundational level of infrastructure is a proper investment for the utility to make. Witness Bateman compared this proceeding to two other fairly common Commission proceedings. First, witness Bateman compared this request to a certificate of public convenience and necessity, in which the utility builds a new transmission line or a new generation plant. The certificate does not guarantee cost recovery; instead, the certificate demonstrates the Commission's conclusion that the utility has justified its decision to construct the facility. The prudence and reasonableness of those costs remain subject to review in a general rate case when cost recovery is sought. Next witness Bateman noted that the Companies seek approval of demand-side management and energy efficiency programs prior to implementing them, with the prudence of those costs subject to later review by the Commission in a cost-recovery proceeding.

### **Settlement Among ChargePoint, DEC, and DEP**

On February 28, 2020, DEC, DEP, and ChargePoint filed a Settlement Agreement. In summary, the settlement provides that customers in the residential program would have unlimited choice of L2 EVSE hardware. With respect to the EVSB program, the settlement provides that EVSE will be installed on the customer's side of the meter with participating customers having a choice of two or more vendors of EV charging hardware and software. The hardware and software would be prequalified by the Companies to meet functional requirements. For the DCFC program, the settlement provides that the Companies will install, own, operate, and maintain the fast chargers; that there will be a minimum of two fast chargers per location capable of charging a single vehicle at a combined demand of 100 kW or more; and that site hosts would have a choice of at least two vendors of EV charging hardware and software, which shall be prequalified by the Companies to meet functional requirements. In an effort to maintain an open market the settlement provides that no single vendor of EV charging hardware shall have more than 60% of the total installations and that once a percentage share for any single vendor of EV charging hardware exceeds 50% in a DEC or DEP service territory, either DEC or DEP, as applicable, will notify the vendor that it is approaching the threshold and establish a waiting list of customer applications for that vendor to be considered should other

projects with other vendors not come to fruition. In addition, the Settlement Agreement grants site hosts the option of creating alternative pricing mechanisms for drivers, which, for purposes of the ET Pilot, may not exceed the DCFC fee by more than 20%.

The Settlement Agreement provides that customers participating in the EVTB program would have a choice of two or more EV charging hardware and software vendors, which shall be prequalified by the Companies to meet functional requirements.

Finally, the Settlement Agreement provides procedural mechanisms to enhance Commission review and oversight, and stakeholder engagement. Specifically, the Settlement Agreement calls for DEC and DEP to convene a series of collaborative meetings with stakeholders (the Electric Transportation Collaborative) to present interim ET Pilot progress and results and to gather feedback on the ET Pilot. The Settlement Agreement provides that Duke agrees to leverage the learnings from the ET Pilot as key inputs to the Comprehensive Rate Design Study proposed by Public Staff witness Floyd in Docket E-7, Sub 1214 to evaluate and develop effective rate design offerings for customers with EVs.

## **DISCUSSION AND CONCLUSIONS**

As demonstrated by the comments in this proceeding there is general agreement that there are many potential benefits to electric ratepayers and society at large in the transition from gasoline- and diesel-powered vehicles to electric transportation. However, there are still many challenges to widespread adoption of EVs, some of which are tied to the lack of charging infrastructure.

Focused pilot programs can serve the purpose of expanding this charging infrastructure while allowing the utility to collect data on the impact of this new electric usage on its system. After carefully considering the goals, costs, and benefits of the seven programs proposed by Duke in its ET Pilot and the comments of the other parties in this proceeding, the Commission finds good cause to approve at this time the Public Level 2 Charging program, as proposed, and limited versions of the Multifamily Dwelling Charging, Direct Current Fast Charging, and EV School Bus Charging programs. Because the Commission declines at this time to approve several of the programs covered by the Duke and ChargePoint settlement, the Commission declines to adopt the Settlement Agreement filed by Duke and ChargePoint.

### **EV School Bus Charging**

As one of its programs aimed at transit electrification Duke proposes to aid the deployment of modern, zero-emission electric school buses by providing funds to offset the incremental costs associated with the battery. In exchange for this funding the customer must allow access to all vehicle charging data and perform testing of charging load management and bidirectional charging capabilities. Duke believes the potential exists for significant cost savings to operators of electric school buses, diesel emissions reductions, and electric system benefits from the adoption of EV school buses in North Carolina. Under

this program Duke will install and own the charging equipment and will retain the right to repurpose the battery as a grid storage asset at the end of its useful vehicle life. Duke argues that the potential use of the batteries as grid assets justifies the investment in this program. Duke proposes to fund on a first-come, first-served basis 55 electric school buses for school districts located in the DEC service territory and 30 electric school buses in the DEP service territory.

The Commission is interested in the potential to utilize batteries with bidirectional power flow capabilities in electric school bus fleets as a grid asset. However, the Commission is concerned that the potential for dispersion of the school buses under the program as it is now proposed limits the program's ability to test that potential at any scale. A more limited pilot, though, may be useful as the first step in a multiphase program. In that first step the utility can gather operational data with respect to charging characteristics, usage patterns, and technology issues relating to bidirectional power flow to and from the battery. The Commission expects that after this "proof of concept" pilot Duke may further propose in a second "proof of value" stage of this pilot program sufficiently scaled and concentrated clusters of electric school buses with bidirectional flow capabilities that will enable the utility to explore their potential as storage resources for local grid support.

The Commission, therefore, will approve at this time a reduced program that will provide funding to offset the purchase of 15 electric school buses by school districts in each of the DEC and DEP service territories for the purpose of gathering operational data and exploring the technical capabilities of the vehicle-to-grid technology.

The Commission is not persuaded that the program should be rejected on the basis that it may benefit wealthier counties, as was argued by some parties. The program is necessarily limited as a pilot, but funds are available to any school district otherwise planning to replace a school bus. Moreover, as Duke states, it designed the program to complement anticipated funding from the Volkswagen Settlement Trust which is administered by the North Carolina Department of Environmental Quality (DEQ). Duke notes that DEQ intends to allocate a portion of the Settlement Trust funds to replace older diesel school buses with new diesel, propane, or electric school buses. Duke expects that the availability of funds from the Settlement Trust, combined with its proposed infrastructure investment, would encourage DEQ to work with school districts to replace a limited number of legacy high-emitting school buses with zero-emission, electric school buses.

## **Public Level 2 Charging**

Duke proposes to install, own, and operate public Level 2 charging stations at key public destination locations to encourage EV adoption, as well as to collect utilization and other load characteristics to understand potential grid and utility impacts. As several parties note, access to reliable public charging stations is essential to building EV driver confidence. Despite improvements in the mileage range of newer EVs, the lack of public Level 2 charging stations is an impediment to greater adoption of EVs. Duke proposes to

deploy 100 public Level 2 charging stations within the DEC service territory and 60 stations within the DEP service territory.

The Commission recognizes that some parties oppose Duke's ET Pilot and in particular, the Public Level 2 Charging program. Regarding this program, NCCEBA, for example, objects to the utility's participation in "a growing competitive market." Greenlots, however, counters that the ET Pilot will support the growth of the competitive market by growing the EV market as a whole and, therefore, increasing the market demand for additional charging stations. SACE/NCJC believe that utilities have an important role to play in the emerging EV market. As Greenlots states, the private EV charging marketplace alone cannot adequately meet North Carolina's transportation electrification and emissions goals, let alone achieve market transformation or maximize future growth and associated benefits.

Although Duke offered to remove this program from the ET Pilot, the Commission finds that the Public Level 2 Charging program has the potential to provide a number of benefits supporting the adoption of EVs, removing impediments, and collecting valuable system impact data while providing potential access to a broad cross-section of Duke's customers. The Commission is persuaded that the Public Level 2 Charging program is in the public interest and should be approved.

### **Direct Current Fast Charging (DCFC)**

Duke further proposes to install, own, and operate a network of publicly accessible direct current fast charging stations throughout its utility service territories to facilitate long-distance travel. Duke proposes to install up to 70 DCFC stations across approximately 35 individual locations in its DEC service territory and up to 50 stations across approximately 25 individual locations in its DEP service territory.

Several parties oppose Duke's proposed DCFC program, either on the basis that it provides no unique learning opportunity or that Duke would garner too large of a percentage of what should be a competitive market. However, other parties argue that the utility has an important role to play in this emerging market. At the hearing, witness Reynolds stated that Duke is proposing to own and operate the DCFC stations to ensure that the stations are well maintained and operable for the full life of the asset. As noted above regarding the Public Level 2 Charging program, access to reliable public charging is essential for the growing EV market, and the lack of fast charging stations to facilitate longer distance travel is an impediment to greater adoption of EVs.

The Commission finds, based upon the record, that a limited version of the DCFC program as proposed by Duke is in the public interest and is approved. The Commission, therefore, will approve a limited version of the DCFC program approximately one-third the size of that proposed and will allow Duke to install, own, and operate up to 24 DCFC stations across approximately 12 individual locations in its DEC service territory and up to 16 stations across approximately 8 individual locations in its DEP service territory.

## **Multifamily Dwelling Charging**

In its third program related to public charging Duke proposes to install, own, and operate Level 2 charging stations to provide access to residential charging for residents of multifamily dwellings. As Duke notes in its application:

Limited ability to install charging infrastructure at a residence is commonly cited as a barrier for Multi-Family Dwelling (“MFD”) tenants to purchase an EV. Accordingly, the Companies designed the ET Pilot to provide easy access to residential charging for non-homeowners throughout the Companies’ service territories.

Duke proposes to deploy 100 stations in DEC’s service territory and 60 stations in DEP’s service territory.

The Commission is persuaded that as the cost of EVs decreases and more used vehicles become available it will be even more important for multifamily housing tenants to have convenient access to charging stations at their residence. While not all residents of multifamily housing are low or moderate income, many are, and several parties emphasized the need to specifically extend the benefits of the Pilot to low- and moderate-income ratepayers.

The Commission finds that a limited version of the program as proposed by Duke is in the public interest. The Commission, therefore, will approve as a pilot a Multifamily Dwelling Charging program half the size of that proposed, with Duke installing up to 50 Level 2 charging stations in the DEC service territory and up to 30 Level 2 charging stations in the DEP service territory.

## **Public Level 2 Charging, Direct Current Fast Charging (DCFC), and Multifamily Dwelling Charging Additional Programs**

In approving these three components of the ET Pilot the Commission is not sanctioning an open-ended or broad, general participation by Duke in the EV charging infrastructure market. Rather, because the goals of the programs are to test public response to wider availability of public charging infrastructure and to acquire data and information on alternative implementation approaches for further analysis, the Commission supports the programs. Once those goals are met, any further participation by Duke in the market for charging infrastructure will be determined at the appropriate time and after full consideration of all pertinent factors.

The Commission further directs Duke to explore and create a second pilot of these three programs in a stakeholder process described below. The Commission expects Duke to explore in the second round of these three pilot programs and any other proposed programs additional ownership and partnership models for EV infrastructure, including utility fully owned and operated stations; make-ready stations with third-party owned

charging equipment; and stations co-owned, co-funded, or co-operated by Duke in partnership with other entities.

### **Stakeholder Process and Criteria for Future Pilot Programs**

The Commission is not persuaded that the other programs proposed by Duke are appropriately focused and sized, and therefore declines to approve those programs at this time. These programs, as currently proposed by Duke, have not been designed to sufficiently explore system benefits that would ultimately justify the estimated expenditure of ratepayer funds. Nevertheless, the Commission is receptive to further pilot programs and provides guidance below with respect to the essential characteristics that such pilot programs should embody.

The Commission supports the goal of gathering operational data needed to quantify the specific costs and benefits attributable to EV usage and to assign these costs and benefits to the appropriate parties. Further, the Commission supports the involvement of public utilities in helping to attain such goals. However, in order to approve the involvement of Duke and other public utilities in any pilot program, the Commission will require that pilot programs also include consideration of or as an aspect of the pilot, at a minimum, the following attributes:

- *Proper Scale and Scope:* The scale and scope of a pilot program should be set in a manner that allows the utility to test a concept at a smaller scale without incurring substantial capital costs, such that if the pilot program is successful it can then be readily deployed system-wide with more assurance that it will be economically viable.
- *Rate Design:* Suitable pilots should involve experimental rate designs and contain measures to track and measure customer response to such rates. The Commission recognizes that in the pending DEC and DEP general rate cases the utilities have proposed to study the general system-wide implementation of special rate plans for electric vehicles as part of a more comprehensive examination of overall rate design. The Commission does not believe it would prejudice that comprehensive study but would in fact be beneficial to that exercise if the utilities offered to a limited group of customers in a pilot program experimental rates to encourage or support EV use.
- *Cost-Benefit Analysis:* Detailed costs and revenues resulting from pilot programs should be tracked and reported in a way that can be used to develop future cost-benefit analyses. A cost-benefit analysis must be conducted on each program before it can be scaled beyond its pilot program size. Any large-scale implementation of piloted programs must show the ability, when scaled, to yield an overall positive system benefit net of all costs.
- *Leverage Other Funding:* Pilot programs should encourage or require the use of third-party funding (private, federal, state, municipal, grants) wherever it is

available. Programs should also encourage ownership and operation partnerships that provide the greatest benefit to customers.

- *Make-ready Approach:* Duke should leverage familiarity with permitting requirements, the interconnection process, and the design, operations, and maintenance of the distribution system to efficiently identify and develop appropriate preparations for EV infrastructure.
- *Objectives, Metrics, and Verification:* Each pilot program should have clearly defined goals, metrics for evaluating performance, and a verification process.
- *Reporting and Stakeholder Engagement:* Duke must engage stakeholders throughout the term of any pilot and report on the performance of the programs on at least an annual basis.

Specifically applying the above criteria to the proposed EV Charging Management programs, the Commission supports incentives where appropriate to collect data or encourage behavior with clear financial benefits to the system. The Commission, however, is not persuaded that the rebate programs as proposed at this time satisfy the criteria set forth herein above. While the Commission acknowledges that the results of the ET Pilot will inform future rate design, Duke presently has sufficient information-gathering tools to test pilot ET rates using data already gathered. For example, when asked at the hearing about the potential for obtaining charging data from the approximately 14,000 EVs currently registered in North Carolina, witness Reynolds acknowledged that existing EV owners are a viable data resource, tr. vol. 1, 31, and therefore could be used for this purpose. Other such resources include data from Duke's AMI meters, data from Duke's and its affiliates' own EV fleets, other affiliates' EV pilot programs, and the resources from other states identified by the Public Staff.

The Commission notes that Duke agrees in its comments to commit to an evaluation, measurement, and verification (EM&V) analysis of the impact of all segments of the ET Pilot to ensure that the goals of the Pilot are met and to engage an expert in how the programs can be evaluated. Duke also offers in its Settlement Agreement with ChargePoint to convene a series of collaborative meetings with stakeholders to present interim ET Pilot progress and results and to gather feedback on the ET Pilot. Lastly, Duke agrees to use the learnings from the ET Pilot in any efforts to evaluate and develop effective rate design offerings for customers with EVs.

With the foregoing in mind, the Commission finds good cause to direct Duke and the Public Staff to convene a collaborative stakeholder process to provide input and feedback on potential future pilot programs and to require that the stakeholder process be organized and conducted as follows:

- (1) Duke and the Public Staff shall equally share the responsibility for the implementation, organization, and leadership of the collaborative;

- (2) All parties to the present dockets shall be invited to engage in full participation in the collaborative;
- (3) The first meeting of the collaborative shall be held within one month of the date of this Order, and subsequent meetings shall be held, at a minimum, every two months thereafter, with the purpose of developing pilot programs that are consistent with the foregoing requirements; and
- (4) Any pilot programs developed by Duke through this collaborative process shall be filed with the Commission for review and approval not later than six months following the date of this Order.

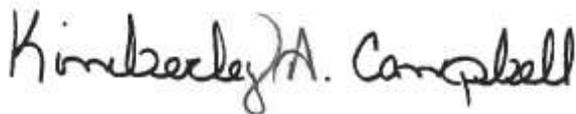
IT IS, THEREFORE, ORDERED as follows:

1. That the Public Level 2 Charging program, as proposed, and a limited version of the Duke proposed Multifamily Dwelling Charging, Direct Current Fast Charging, and EV School Bus Charging programs, as described herein, are approved;
2. That the remaining programs proposed as part of the ET Pilot and the Companies' Settlement Agreement with ChargePoint are not approved; and
3. That Duke and the Public Staff shall organize and facilitate a collaborative stakeholder process in compliance with the guidelines provided in this Order and file any stakeholder developed pilot programs within six months of this Order.

ISSUED BY ORDER OF THE COMMISSION.

This the 24th day of November, 2020.

NORTH CAROLINA UTILITIES COMMISSION



Kimberley A. Campbell, Chief Clerk