BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-2, SUB 1197
DOCKET NO. E-7, SUB 1195

In the Matter of:	**)**	
Application by Duke Energy Carolinas, LLC and Duke Energy Progress, LLC for Approval of Proposed Electric Transportation Pilot	**)**	**NCSEA'S INITIAL COMMENTS**

NCSEA'S INITIAL COMMENTS

Pursuant to the North Carolina Utilities Commission's ("Commission") *Order Requesting Comments on Proposed Electric Transportation Pilot Program* issued on April 4, 2019, as modified by the Commission's April 18, 2019 *Order Granting Extension of Time to File Comments and Reply Comments*, the North Carolina Sustainable Energy Association ("NCSEA"), an intervenor in the above-captioned proceeding, offers the following comments on *Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's Application for Approval of Proposed Electric Transportation Pilot* ("Application") filed by Duke Energy Progress, LLC ("DEP") and Duke Energy Carolinas, LLC ("DEC") (DEP and DEC collectively "Duke") on March 29, 2019, which proposed an Electric Transportation Pilot ("Pilot") to be undertaken by Duke.

As an initial matter, NCSEA fully supports the deployment of electric vehicles ("EVs") and EV charging infrastructure, but NCSEA believes that such investments should be made intelligently in ways that support all market participants. NCSEA believes 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.

I. CAPITAL INVESTMENTS

Duke's Application proposes investments that fall generally into two categories: capital investments and rebates. These Comments address these two categories in turn. For the reasons set forth below, NCSEA believes that the Commission should reject Duke's request to make capital investments in EV charging infrastructure. Instead, the Commission should direct Duke to develop and propose an EV "make-ready" program.

A. MARKET SIZE

Duke's assertions that the Pilots would be "installing a foundational level of DC fast charging stations in North Carolina,"[1] and that "The number of chargers installed under the Pilots is a fraction of the anticipated need for charging infrastructure in light of the goals of EO80, leaving ample room for third-party investment[,]"[2] are simply unsupported by the evidence. As an initial matter, Duke provides conflicting information about the size of the DC fast charging ("DCFC") market. In its Application, Duke says that nearly 300 DCFC *plugs* are necessary to support 80,000 EVs, the goal set forth by Governor Cooper in Executive Order 80.[3] In discovery, however, Duke provided conflicting information, telling NCSEA that 455 *plugs* are necessary to support 80,000 EVs and telling the Public Staff that 455 *stations* are necessary.[4] Given that the U.S. Department of Energy's EVI-

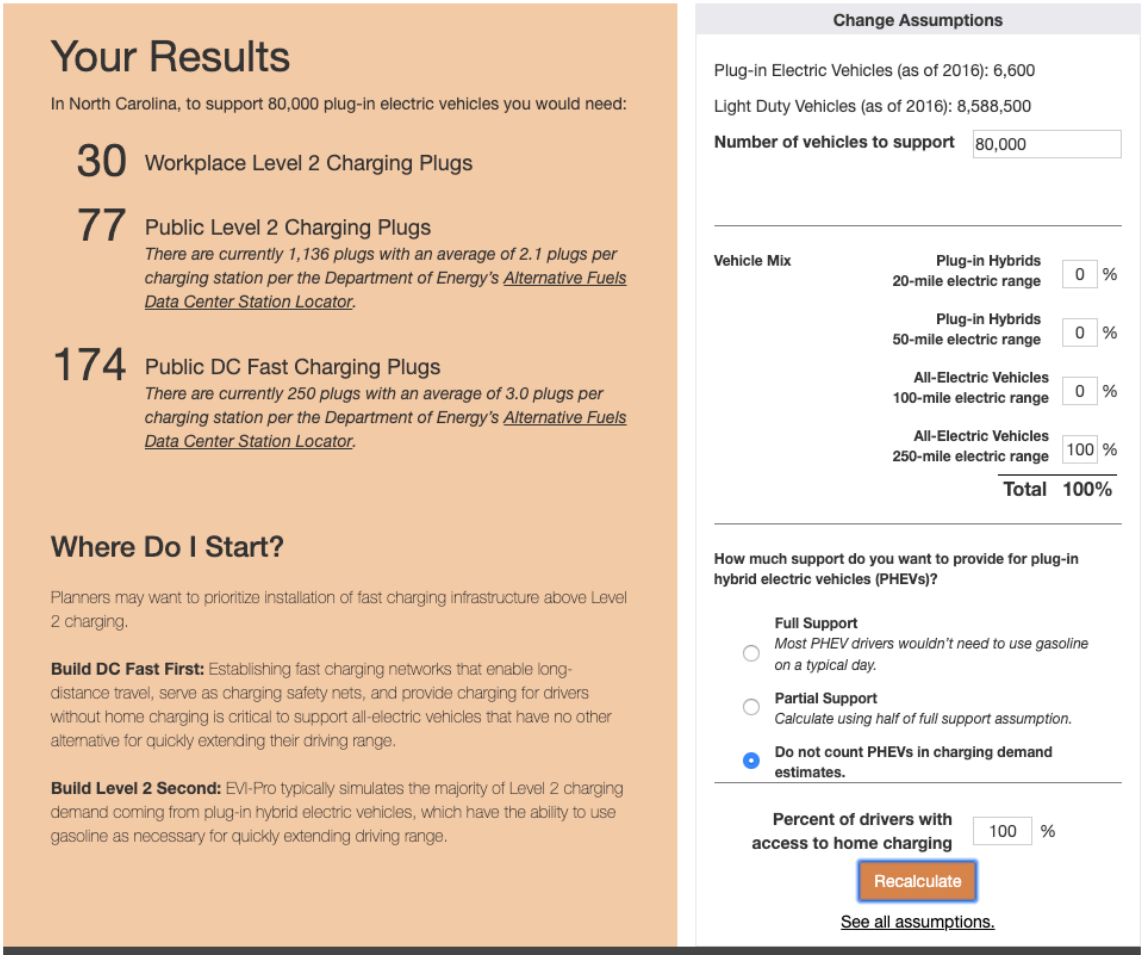
[1] Application, pp. 6-7. NCSEA notes that there is a difference between EV charging *stations* and EV charging *plugs* and that the terms are not interchangeable. An EV charging *station* may have multiple *plugs*.
[2] Duke Response to Public Staff Data Request No. 1-5, included as **Attachment 1**.
[3] Application, p. 14.
[4] Compare Duke's Response to Public Staff Data Request No. 1-28, included as **Attachment 2**, to Duke's Supplemental Response to NCSEA Data Request No. 2-13, included as **Attachment 3**.

Pro Lite Tool says that there are an average of 2.9 *plugs* per *station*,[5] Duke has said that the size of the DCFC market is either "nearly 300" *plugs*,[6] 455 *plugs*,[7] or 1,320 *plugs*.[8]

NCSEA further disagrees with one of the assumptions that Duke used in the EVI-Pro Lite Tool to calculate market size. In order to maximize the market size for DCFC, Duke adjusted the percentage of drivers with access to home charging from its default of 100% to 80%. Duke did not provide any justification for its assumption that 20% of EV drivers will not have access to home charging and NCSEA believes that such an assumption is unreasonable, especially when Duke is simultaneously proposing to deploy public Level 2 chargers at multi-family residences. As shown in **Figure 1**, running the EVI-Pro Lite Tool with the assumption that 100% of EV drivers have access to home charging yields a DCFC market of 174 plugs.

[5] **Attachment 3**.
[6] Application, p. 14.
[7] **Attachment 3**.
[8] **Attachment 2**. 455 stations with 2.9 plugs each equals 1,319.5 plugs.

Figure 1



The speed at which the existing market is changing underscores NCSEA's concerns about Duke's Application. When Duke filed its Application just over three months ago, Duke noted that there were only 86 DCFC plugs available in North Carolina.[9] As of July 2, there were 144 DCFC plugs.[10]

[9] Application, p. 3. This number excludes Tesla-owned plugs.

[10] U.S. Department of Energy Alternative Fuels Data Center, *available at* https://afdc.energy.gov/stations/#/analyze?region=US-NC&fuel=ELEC&ev_levels=dc_fast&ev_connectors=J1772COMBO&ev_connectors=CHADEMO&ev_connectors=J1772. To maintain consistency with Duke's Application, this number excludes Tesla-owned plugs.

Furthermore, NCSEA fundamentally disagrees with Duke's decision not to include Tesla charging stations in its examination of the size of the DCFC market.[11] In 2018, Tesla sold more EVs than all other EV manufacturers combined (191,627 Tesla EVs sold to 169,680 other EVs).[12] That trend has continued through May 2019 (58,175 Tesla EVs sold compared to 52,711 other EVs).[13] Given the sheer volume of Tesla EVs, the fact that Tesla charging stations can only charge Tesla EVs does not mean that Tesla charging stations should be excluded when examining the market. As of July 2, Tesla has 106 DCFC plugs in North Carolina,[14] bringing the state's total DCFC plug deployment to 250.

Returning to Duke's claim that the Pilot would allow "ample room for third-party investment[,]"[15] based on the information provided by Duke to NCSEA and current data, shown in **Table 1**, there would only be a market remaining for 238 DCFC plugs, meaning that roughly one-third of the market would be remaining. NCSEA fundamentally disagrees with Duke that this allows "ample room for third-party investment." Furthermore, Duke's proposal would entirely flood the market for public Level 2 plugs, leaving absolutely no room for further market participation.

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[11] Application, fn. 8.

[12] Inside EVs, *Monthly Plug-In EV Sales Scorecard: Historical Chart*, available at https://insideevs.com/news/344007/monthly-plug-in-ev-sales-scorecard-historical-charts/.

[13] Inside EVs, *Update 5: Monthly Plug-In EV Sales Scorecard: June 2019*, available at https://insideevs.com/news/357565/ev-sales-scorecard-june-2019/.

[14] U.S. Department of Energy Alternative Fuels Data Center, *available at* https://afdc.energy.gov/stations/#/analyze?region=US-NC&fuel=ELEC&ev_connectors=TESLA&ev_levels=dc_fast.

[15] **Attachment 1**.

Table 1

	Public Level 2 Plugs	DCFC Plugs
Deployed (J1772, CHAdeMO, SAE CCS)	961[16]	144[17]
Deployed (Tesla)	174[18]	106[19]
Total Deployed	1,135	250
Duke (Proposed)	320[20]	120[21]
Total Deployed inc. Duke Proposal	1,455	370
Projected Need (Plugs)[22]	143	455
Total Need[23]	1,270	693
Remaining Market	-185	238

B. SITING OF CHARGERS

In its Application, Duke states that "The Companies are also well-suited to locate chargers in a manner where they are available to all customers rather than only to those of demographics or locations that are early adopters of new technology."[24] In response to a data request, Duke further stated that "Priority will also be given to locations in income-qualified areas and sites that do not require extensive electrical upgrades."[25] However,

[16] U.S. Department of Energy Alternative Fuels Data Center, *available at* https://afdc.energy.gov/stations/#/analyze?region=US-NC&fuel=ELEC&ev_connectors=J1772COMBO&ev_connectors=CHADEMO&ev_connectors=J1772&ev_levels=2.
[17] U.S. Department of Energy Alternative Fuels Data Center, *available at* https://afdc.energy.gov/stations/#/analyze?region=US-NC&fuel=ELEC&ev_levels=dc_fast&ev_connectors=J1772COMBO&ev_connectors=CHADEMO&ev_connectors=J1772.
[18] U.S. Department of Energy Alternative Fuels Data Center, *available at* https://afdc.energy.gov/stations/#/analyze?region=US-NC&fuel=ELEC&ev_connectors=TESLA&ev_levels=2.
[19] U.S. Department of Energy Alternative Fuels Data Center, *available at* https://afdc.energy.gov/stations/#/analyze?region=US-NC&fuel=ELEC&ev_connectors=TESLA&ev_levels=dc_fast.
[20] Duke Response to NCSEA Data Request No. 2-12, included as **Attachment 4**.
[21] Application, p. 15. Note that the Application does not specify whether these are chargers or plugs.
[22] **Attachment 3**.
[23] Calculated from adding existing plugs plus needed plugs included in **Attachment 3**.
[24] Application, p. 7.
[25] Duke Response to Public Staff Data Request No. 1-26, included as **Attachment 5**.

NCSEA has concerns regarding (i) how Duke will or will not utilize its knowledge of the grid in siting charging infrastructure and (ii) how Duke will ensure that underserved communities have access to charging infrastructure.

1. LOCATIONS BENEFICIAL TO THE GRID

In response to a data request from the Public Staff, Duke asserts that utility ownership of EV charging infrastructure "allows the utility to place stations optimally where there is grid capacity[.]"[26] However, in response to a follow-up question from NCSEA, Duke made clear that this is not a simple process, noting that "As part of the pilot application process, the Companies will perform a Customer Site Investigation (CSI) at each site to assess transformer load capacity and upgrade requirements to provide service for charging station installation."[27] NCSEA has previously advocated that Duke should perform integrated distribution planning[28] and develop hosting capacity maps.[29] Either of these tools would allow Duke to optimally place charging infrastructure without having to go through the inefficiencies of performing individual site investigations. As such, NCSEA believes that it is inappropriate for Duke to move forward with the EV Program until it can more economically evaluate potential sites for charging infrastructure using integrated distribution planning or hosting capacity maps.

NCSEA also has fundamental concerns that Duke's knowledge of the grid would allow it to capitalize, and effectively monopolize, the market for charging infrastructure when North Carolina law grants them no such monopoly. Duke's knowledge of the grid, and where upgrades would be necessary in order to host charging infrastructure, gives them

[26] Duke Response to Public Staff Data Request No. 1-7, included as **Attachment 6**.
[27] Duke Response to NCSEA Data Request No. 2-8, included as **Attachment 7**.
[28] *See generally*, Docket Nos. E-2, Sub 1142, E-7, Sub 1146, and E-100, Sub 157.
[29] *See generally*, Docket No. E-100, Sub 101.

an unfair advantage over other market participants who do not have access to such information. In effect, Duke could use its knowledge to install charging infrastructure at all locations that do not require expensive upgrades, and leave sites that require expensive upgrades for other market participants. The Commission went through great pains to ensure that Duke's regulated utilities did not have any competitive advantages over other market participants in the Competitive Procurement of Renewable Energy program, and such concerns are just as applicable in the current context.

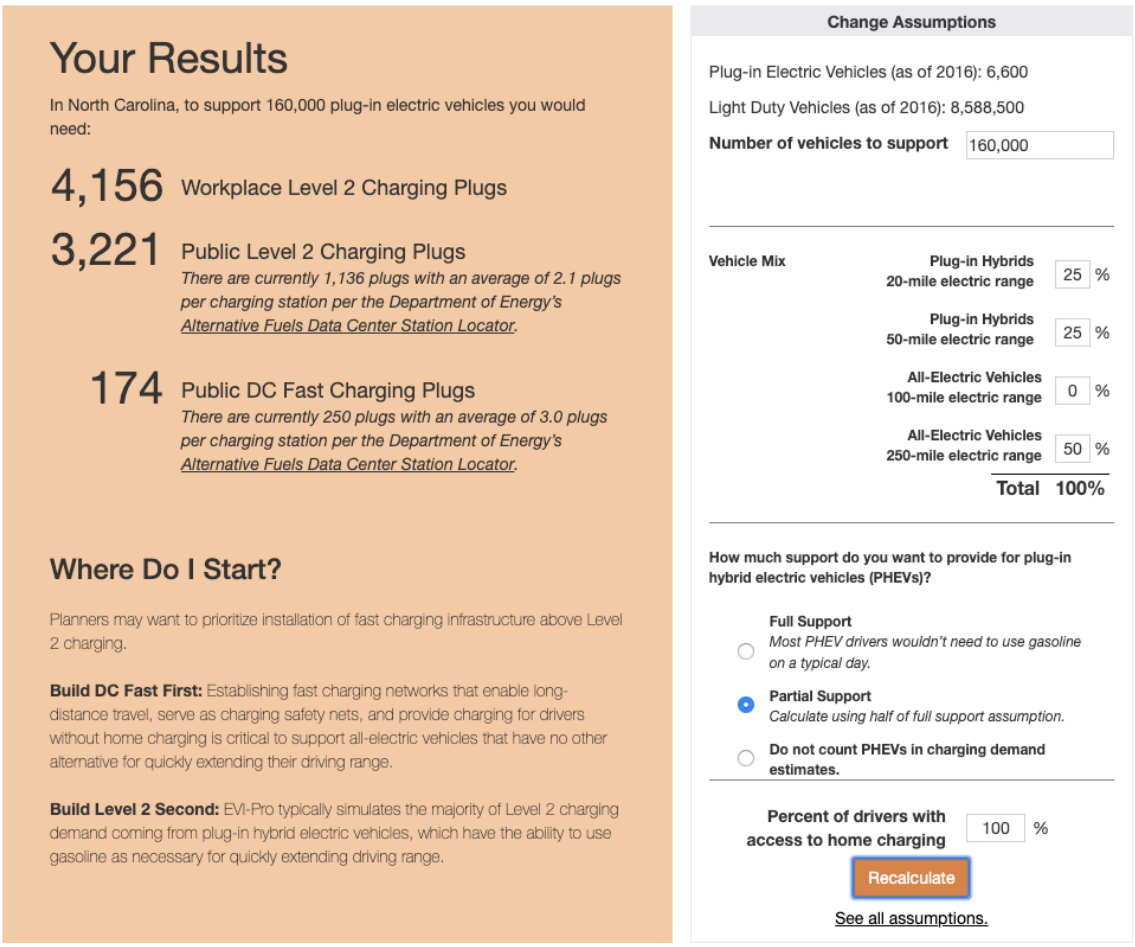
Finally, NCSEA is concerned about the Application's focus on DCFC instead of Level 2 charging, especially when it comes to benefits to the grid from EV charging. DCFC does not easily allow for demand-side management of EV charging and produces extremely high demands for short periods of time. In comparison, Level 2 charging is fully compatible with demand-side management, or managed charging.[30] As North Carolina deals with the transition from a summer-peaking system to a winter-peaking system, uncontrolled EV charging could exacerbate the need for more peaker plants.

Furthermore, NCSEA believes that the assumptions made by Duke in calculating the size of the DCFC market artificially reduce the number of public Level 2 plugs that will be necessary. In utilizing the EVI-Pro Lite Tool, Duke included no support for plug-in hybrid vehicles ("PHEVs") that utilize both electricity from the grid and a gasoline engine. As is shown in **Figure 2**, running the EVI-Pro Lite Tool assuming that North Carolina will have 80,000 EVs, 40,000 PHEVs with a 20-mile electric range, and 40,000 PHEVs with a 50-mile electric range results in a need for 3,221 public Level 2 plugs, in

[30] Fitzgerald, Garrett and Chris Nelder, *From Gas to Grid: Building Charging Infrastructure to Power Electric Vehicle Demand*, p. 33 (Rocky Mountain Institute, 2017), available at https://www.rmi.org/insights/reports/from_gas_to_grid ("*From Gas to Grid*").

addition to the existing 1,136 public Level 2 plugs that are shown in the tool. It is also worth noting that most PHEVs cannot utilize DCFCs, which further justifies focusing attention on the deployment of public Level 2 plugs.

Figure 2



As such, NCSEA would prefer that any capital investments approved by the Commission focus on Level 2 managed charging, which would provide more benefits to the grid, potentially reduce the need for new investments in peaker plants that would be borne by all ratepayers, and more accurately reflect the needs of North Carolina's citizens.

2. LOCATIONS BENEFICIAL TO THE COMMUNITY

In its Application, Duke states that it is "well-suited to locate chargers in a manner where they are available to all customers rather than only to those of demographics or locations that are early adopters of new technology."[31] NCSEA fully supports providing underserved communities with access to charging infrastructure. However, it does not appear that Duke has any substantive plans to follow through on their assertion. In response to a data request for all metrics and scoring criteria that will be used for the siting of Duke-owned chargers, Duke responded that:

> Key components of the scoring criteria will include (i) Multi-family 24/7 publicly accessible locations near multi-family dwellings (.25 mile radius), (ii) Public L2 24/7 publicly accessible locations at destinations where vehicle dwell-times are estimated to be 2 or more hours, (iii) Public Fast Charging 24/7 publicly accessible corridor locations where fast charging infrastructure gaps currently exist (50 mile radius) per DOE Alternative Fuel Database Center mapping.[32]

NCSEA believes that these three metrics are insufficient to ensure that all ratepayers, and specifically underserved communities, have access to any Duke-owned EV charging infrastructure. If the Commission authorizes Duke to make capital investments in EV charging infrastructure, NCSEA recommends that they also require Duke to work with stakeholders to develop scoring criteria and file such scoring criteria with the Commission.

C. OTHER ISSUES

NCSEA is concerned that Duke intends to recover the costs of the Pilot through rate base.[33] Third-party charging providers are able to recover their costs through charging

[31] Application, p. 7.
[32] Duke Response to NCSEA Data Request No. 2-4, included as **Attachment 8**.
[33] Application, p. 17.

fees paid by EV drivers and bear the risk of being unable to recover their costs. In comparison, Duke does not expect that the fees paid by EV drivers, which are set to be competitive with third-party charging providers, will recover all of the costs of the charging infrastructure proposed in the Pilot.[34]

NCSEA is also concerned that Duke's Application proposes to set electricity rates outside the context of a general rate case pursuant to N.C. Gen. Stat. § 62-133. This is, by definition, single-issue ratemaking that has historically been prohibited by the Commission. Duke has provided no justification for the 2 ¢/kWh charge that would be paid on top of Duke's standard rates that it proposes to charge for the Multi-Family Dwelling Charging Station Program[35] and the Public L2 Charging Station Program,[36] and has not even specified what the rate would be for the Fast Charging Program.[37] NCSEA is also concerned about Duke's proposal to "calculate, update, and publish the Fast Charge Fee on a quarterly basis" outside the context of a general rate case, without Commission oversight or notice and opportunity to be heard.[38]

Finally, Duke has not addressed how it will bill EV drivers that charge their vehicles at Duke-owned charging equipment. Most third-party charging providers have mobile phone applications and other sophisticated billing software. Duke has not explained whether EV drivers would be billed through its new Customer Connect system, via a third-party billing provider, or in some other manner.

[34] Application, p. 16.
[35] Application, p. 13.
[36] Application, p. 14.
[37] *See generally*, Application pp. 14-16.
[38] Application, p. 16.

D. ADVANTAGES OF MAKE-READY

As noted above, NCSEA recommends that the Commission reject Duke's request to invest capital in EV charging stations and instead direct Duke to file a proposal for a make-ready program. In essence, a make-ready program would provide electrical service to the point where a charging station could be installed.[39] Such a program would be consistent with Duke's line extension policies that have been approved by the Commission. Allowing Duke to rate base EV charging stations would distort the competitive market for EV charging services, and reduce the likelihood of rapid technological and business model innovation.[40] However, NSCEA agrees with the Rocky Mountain Institute's statement that "the most expedient path would be to allow utilities to rate-base at least the make-ready portion of charging infrastructure[.]"[41]

II. REBATES

While NCSEA is opposed to the capital investments proposed in Duke's Application, if modified as set forth below, NCSEA would not be opposed to the rebates proposed in the Application.

A. REBATE AMOUNTS

With the exception of the Residential EV Charging Program, NCSEA does not object to the rebate amounts proposed in Duke's Application. However, NCSEA believes that the rebate for the Residential EV Charging Program should be lowered from $1,000 to

[39] *From Gas to Grid*, p. 28.
[40] *From Gas to Grid*, p. 40. NCSEA prefers to allow the competitive market to deploy EV charging stations. However, if the Commission establishes goals for the deployment of EV charging infrastructure and the competitive market fails to meet those goals, NCSEA would be willing to revisit the issue of Duke rate-basing charging infrastructure.
[41] *From Gas to Grid*, p. 28.

$500.[42] According to Duke's own estimates, the rebate could cover the entire cost of a home charger.[43] Other rebates offered by Duke generally do not cover the entire cost of a measure, such as the installation of energy efficiency upgrades or rooftop solar. In addition, lowering the rebate amount to $500 would allow participation to double, providing further managed charging benefits to the grid and Duke's ratepayers.

B. RATE DESIGN

The Pilot's proposed Fleet EV Charging Program would require that participating customers take service on an applicable time of use ("TOU") rate.[44] Specifically, participating DEC customers would be required to take service under Schedule OPT-V and DEP customers would be required to take service under Schedule SGS-TOU.[45] Both of these rate schedules include demand charges. EV charging on a rate schedule that includes a demand charge can be extremely problematic for customers, and makes managing bills extremely difficult. This is especially true for fleet operators, who are likely to have multiple EVs charging at the same time. As such, NCSEA opposes the requirement that customers participating in the Fleet EV Charging Program take service under DEC Schedule OPT-V or DEP Schedule SGS-TOU.

NCSEA has previously advocated that the Commission should direct utilities to develop EV-specific rate tariffs.[46] According to the Rocky Mountain Institute, the key characteristics of an EV rate design are (i) no demand charge, (ii) a fixed charge that is

[42] Application, pp. 9-10.
[43] Duke Response to Public Staff Data Request No. 1-13, included as **Attachment 9**.
[44] Application, p. 10.
[45] Application, Exhibit D.
[46] *See generally*, *NCSEA's Post-Hearing Brief*, pp. 50-51, Docket No. E-7, Sub 1146 (April 27, 2018); *DNCP and NCSEA Letter of Agreement*, Docket No. E-22, Sub 532 (December 13, 2016); *NCSEA's Post-Hearing Brief*, pp. 7-8, Docket No. E-22, Sub 532 (November 15, 2016).

limited to recovery of customer-specific costs, and (iii) a time-varying energy rate.[47] The fact that Duke has proposed the Pilot prior to adopting EV-specific rate tariffs highlights the need for Commission direction regarding EV rate design. As such, NCSEA requests that the Commission direct DEC and DEP to propose EV-specific rate tariffs in their next general rate case filings, and to address the issue of EV rate design in a generic proceeding.

C. SCORING CRITERIA

As with siting EV charging infrastructure in a manner that is most beneficial to the community, NCSEA is concerned that neither Duke's EV School Bus Charging Program nor Duke's EV Transit Bus Charging Station Program are designed to ensure that all communities, including underserved communities, are able to receive rebates. Participation in both the EV School Bus Charging Program and the EV Transit Bus Charging Station Program will be on a first-come, first-served basis.[48] Making such investments on a first-come, first-served basis is likely to result in wealthy school districts and transit systems using up the rebates before underserved communities are able to participate, and runs counter to Duke's assertion that it is best positioned to ensure that all communities benefit from vehicle electrification, and not just locations that are early adopters of new technology. Duke's assertion is further undermined by the fact that their only compromise appears to be that "the Companies are open to imposing participation limits on individual school systems to ensure that EVSBs are distributed geographically across the state."[49] Geographic diversity should only be one criterion in determining who can participate in the EV School Bus Charging Program.

[47] Chris Nelder, James Newcomb, and Garrett Fitzgerald, *Electric Vehicles as Distributed Energy Resources*, pp. 46-47 (Rocky Mountain Institute, 2016), available at http://www.rmi.org/pdf_evs_as_DERs.
[48] Application, pp. 11, 13.
[49] Duke Response to Public Staff Data Request No. 1-15, included as **Attachment 10**.

As with Duke's proposed investments in EV charging infrastructure, NCSEA believes that there should be scoring criteria for the availability of rebates under both the EV School Bus Charging Program and the EV Transit Bus Charging Station Program, and that such criteria should be approved by the Commission after notice and an opportunity to be heard. NCSEA is willing to assist with developing scoring criteria, as well as reviewing and selecting projects. NCSEA staff have experience setting scoring criteria, soliciting competitive bids, and managing hundreds of millions of dollars in funds for energy programs, and NCSEA is willing to lend that expertise to help ensure successful and equitable results.

III. OTHER ISSUES

A. MARKETING

Duke plans to spend $3,375,000 on education and outreach to implement the Pilot.[50] NCSEA finds this level of spending concerning, especially given Duke's track record on marketing pilot programs. For example, DEP spent between $31.48 and $57.63 *per participating customer* to market its TOU rates.[51] When DEC marketed its TOU rates, it managed a 0.76% acquisition rate.[52] NCSEA believes that a more prudent use of ratepayer funds would be for Duke to select, subject to Commission approval, a third-party to perform education and outreach regarding the Pilot.

[50] Application, p. 17.
[51] *Duke Energy Progress, Inc. Time of Use Rate Study*, p. 66, Docket No. E-2, Sub 1023 (May 28, 2015).
[52] *Reports on Pilot Time of Use and Peak Time Credit Rate Schedules*, *Duke Energy Carolinas Pilot TOU Rates Report to the North Carolina Utilities Commission*, p. 32, Docket No. E-7, Sub 1026 (December 18, 2015).

B. REPORTING

In its Application, Duke proposes annual reporting on its Pilot.[53] If the Commission chooses to approve the Pilot, NCSEA believes that more frequent reporting is necessary. NCSEA believes that the reporting requirements for Duke's rooftop solar rebate program[54] would be an appropriate model for reporting requirements for the Pilot, where frequent reporting is required until rebates are all utilized and less frequent reporting thereafter.

IV. CONCLUSION

For the reasons set forth in these Comments, NCSEA respectfully requests that the Commission deny Duke's request to make capital investments in the Pilot and instead direct Duke to file a make-ready program. NCSEA further requests that the Commission approve the rebates proposed in the Application subject to the modifications discussed in these Comments. Finally, NCSEA requests that the Commission open a generic docket on EV charging.

Respectfully submitted, this the 5th day of July, 2019.

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[53] Application, p. 8.
[54] *See generally*, Docket Nos. E-2, Sub 1167 and E-7, Sub 1166.

CERTIFICATE OF SERVICE

I hereby certify that all persons on the docket service list have been served true and accurate copies of the foregoing Comments by hand delivery, first class mail deposited in the U.S. mail, postage pre-paid, or by email transmission with the party's consent.

This the 5th day of July, 2019.

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Attachment 1

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

Please explain how the Pilots will help or promote a competitive market for electric vehicle charging. Was this a consideration by Duke when developing the programs in the Pilots?

Response:

A robust competitive market for EV charging services is important for widespread adoption of EVs. The market is currently not competitive due to its early stage and lack of positive economics, leading to only a handful of operators and network service providers dominating the market today. For example, 95% of all smart, networked Level 2 EVSE in North Carolina are operated on just one network. Development of a competitive market was a consideration in the development of the Pilots. The Pilots are limited in scope, investment, and time horizon. The Pilots will deploy a foundational level of fast charging infrastructure, particularly along highway corridors where utilization will be lower than urban locations but which are crucially important to foster consumer confidence in the ability to drive an EV without suffering limited range. By improving the availability of infrastructure needed for widespread EV adoption, the Pilots will facilitate faster growth of the EV market, creating more opportunities for third-party operators than would otherwise exist absent the Pilots. The number of chargers installed under the Pilots is a fraction of the anticipated need for charging infrastructure in light of the goals of EO80, leaving ample room for third-party investment.

Attachment 2

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

Please explain how Duke arrived at the number of DCFC stations to be installed by the program (70 stations at 35 locations for DEC and 50 stations at 25 locations for DEP).

Response:

DEC and DEP used the Department of Energy Alternative Fuels Data Center tool EV-ProLite to forecast the need for public fast charging needs based on the goal of Executive Order 80 for 80,000 zero-emission vehicles in North Carolina by 2025. https://afdc.energy.gov/evi-pro-lite.

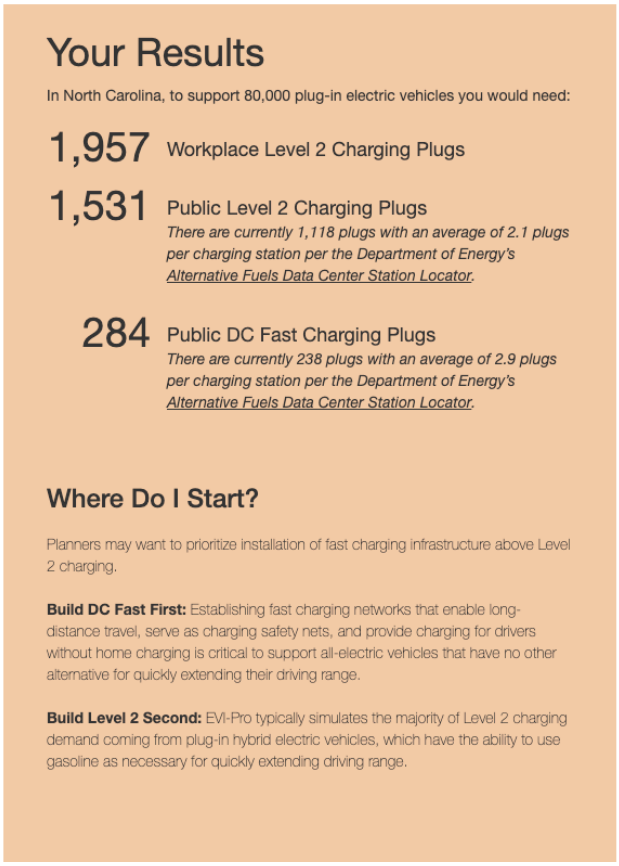
Results from the tool indicate a need for 455 public fast charge stations to support 80,000 plug-in electric vehicles. DEC and DEP proposed 120 fast charge stations - less than one-third of the total gap - to lay the initial foundation of a fast charge network that will provide opportunities for other market participants to enter the market. DEC and DEP allocations in turn were determined approximately by the proportionate number of residential customers served in each territory.

Attachment 3

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

Duke's response to Public Staff DR1-28 states that the DOE's AFDC tool EV-ProLite forecasts that North Carolina will need 455 public fast charging stations to support 80,000 plug-in vehicles. When NCSEA uses the EV-ProLite forecast, it indicates that North Carolina would need 284 public fast charging plugs to support 80,000 plug-in vehicles. Please provide the assumptions used by Duke to reach 455 public fast charging stations and reconcile the differences with NCSEA's use of the tool.



Your Results

In North Carolina, to support 80,000 plug-in electric vehicles you would need:

1,957 Workplace Level 2 Charging Plugs

1,531 Public Level 2 Charging Plugs

There are currently 1,118 plugs with an average of 2.1 plugs per charging station per the Department of Energy's Alternative Fuels Data Center Station Locator.

284 Public DC Fast Charging Plugs

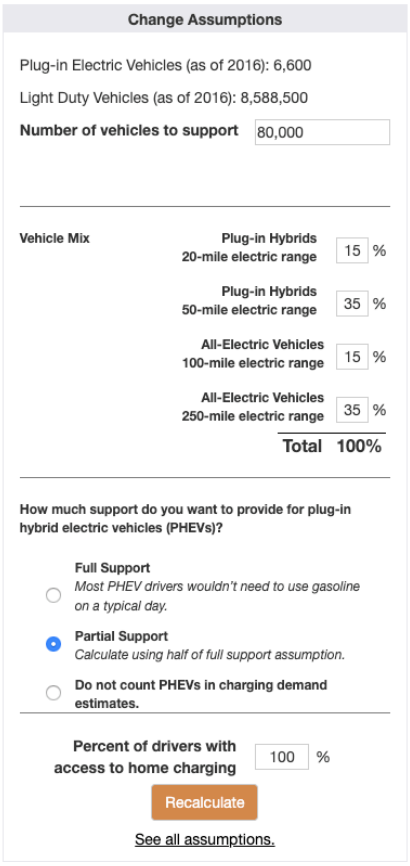
There are currently 238 plugs with an average of 2.9 plugs per charging station per the Department of Energy's Alternative Fuels Data Center Station Locator.

Where Do I Start?

Planners may want to prioritize installation of fast charging infrastructure above Level 2 charging.

Build DC Fast First: Establishing fast charging networks that enable long-distance travel, serve as charging safety nets, and provide charging for drivers without home charging is critical to support all-electric vehicles that have no other alternative for quickly extending their driving range.

Build Level 2 Second: EVI-Pro typically simulates the majority of Level 2 charging demand coming from plug-in hybrid electric vehicles, which have the ability to use gasoline as necessary for quickly extending driving range.



Change Assumptions

Plug-in Electric Vehicles (as of 2016): 6,600

Light Duty Vehicles (as of 2016): 8,588,500

Number of vehicles to support 80,000

Vehicle Mix

Plug-in Hybrids 20-mile electric range	15 %
Plug-in Hybrids 50-mile electric range	35 %
All-Electric Vehicles 100-mile electric range	15 %
All-Electric Vehicles 250-mile electric range	35 %
Total	**100%**

How much support do you want to provide for plug-in hybrid electric vehicles (PHEVs)?

- ○ **Full Support** *Most PHEV drivers wouldn't need to use gasoline on a typical day.*
- ◉ **Partial Support** *Calculate using half of full support assumption.*
- ○ **Do not count PHEVs in charging demand estimates.**

Percent of drivers with access to home charging 100 %

Recalculate

See all assumptions.

Supplemental Response:

Please see the attached document, NCSEA DR2-13 Supplement_ET Pilot.

NCSEA%20DR2-13%
20Supplement_ET%2

Initial Response:

Duke Energy used the EV-ProLite tool to model NC Fast Charging needs for 80,000 Battery Electric Vehicles ("BEV")-only vehicles in support of the Zero Emission Vehicles ("ZEV") goal of Executive Order 80 (EO-80). Based on information from NC DOT, PHEVs will not count toward the EO-80 goal as they are not true ZEVs. We also assumed BEVs would have a driving range of 200 miles per charge as this is the minimum range available on the market today for new BEV models currently coming to market and expected to dominate the majority of EV sales through 2025.

We were also using EVI Pro-Lite with the following assumptions which results in 455 DCFC:

Your Results

In North Carolina, to support 80,000 plug-in electric vehicles you would need:

56 Workplace Level 2 Charging Plugs

143 Public Level 2 Charging Plugs

There are currently 1,127 plugs with an average of 2.1 plugs per charging station per the Department of Energy's Alternative Fuels Data Center Station Locator.

455 Public DC Fast Charging Plugs

There are currently 238 plugs with an average of 2.9 plugs per charging station per the Department of Energy's Alternative Fuels Data Center Station Locator.

Where Do I Start?

Planners may want to prioritize installation of fast charging infrastructure above Level 2 charging.

Build DC Fast First: Establishing fast charging networks that enable long-distance travel, serve as charging safety nets, and provide charging for drivers without home charging is critical to support all-electric vehicles that have no other alternative for quickly extending their driving range.

Build Level 2 Second: EVI-Pro typically simulates the majority of Level 2 charging demand coming from plug-in hybrid electric vehicles, which have the ability to use gasoline as necessary for quickly extending driving range.

Change Assumptions

Plug-in Electric Vehicles (as of 2016): 6,600

Light Duty Vehicles (as of 2016): 8,588,500

Number of vehicles to support 80,000

Vehicle Mix

Plug-in Hybrids 20-mile electric range	0 %
Plug-in Hybrids 50-mile electric range	0 %
All-Electric Vehicles 100-mile electric range	0 %
All-Electric Vehicles 250-mile electric range	100 %
Total	**100%**

How much support do you want to provide for plug-in hybrid electric vehicles (PHEVs)?

- ○ **Full Support** *Most PHEV drivers wouldn't need to use gasoline on a typical day.*
- ○ **Partial Support** *Calculate using half of full support assumption.*
- ◉ **Do not count PHEVs in charging demand estimates.**

Percent of drivers with access to home charging 80 %

Recalculate

See all assumptions.

Attachment 4

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

The Application states that Duke will install 100 level 2 stations in DEC's service territory and 60 in DEP's service territory. Please provide the number of level 2 plugs that would be installed in each service territory.

Response:

Pilot program budgets estimate the cost of a dual-cord EVSE for each L2 station deployment location. Therefore, we anticipate 200 plugs for 100 stations in DEC and 120 plugs for the 60 stations in DEP. However, final L2 deployment configurations will depend on the negotiated host-site agreements.

Attachment 5

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

Please provide the criteria or qualifications Duke will use when selecting the locations of charging stations.

Response:

The Companies will depend on third-party site hosts to apply to the program to host public fast charging. Criteria will include 24/7 access, 24/7 lighting, and proximity to amenities such as food, shopping, and restrooms. Priority will also be given to locations in income-qualified areas and sites that do not require extensive electrical upgrades.

Attachment 6

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

With respect to the statement on page 7 asserting that "The Companies can also ensure that charging infrastructure is integrated safely, reliably, and cost-effectively:" Do the Companies contend they can accomplish this integration more effectively than third party charging station owners? If so, please explain.

Response:

With respect to the statement on page 7, the Companies were not stating they could accomplish integration more effectively than third parties. The Companies note, however, that they have a continuing obligation to deliver electric public utility service safely, reliably and cost-effectively. The proposed "own and operate" model allows DEC and DEP to ensure that the chargers deployed are used and useful for the full life of the assets. Rebate programs for public charging infrastructure can create stranded asset risk when the utility has no ability to ensure that the chargers remain operable and in good condition over time. Furthermore, this model allows the utility to place stations optimally where there is grid capacity and where private operators may not be interested in siting them because utilization may be lower, but are nonetheless critical to supporting broader EV adoption.

Attachment 7

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

Duke's response to Public Staff DR1-7 states that utility ownership of EV chargers "allows the utility to place stations optimally where there is grid capacity[.]" Please state whether Duke will place stations optimally where there is grid capacity and, if so, how Duke will identify locations where there is grid capacity.

Response:

As part of the pilot application process, the Companies will perform a Customer Site Investigation (CSI) at each site to assess transformer load capacity and upgrade requirements to provide service for charging station installation.

Attachment 8

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

Page 7 of the Application states that "The Companies are also well-suited to locate chargers in a manner where they are available to all customers rather than only to those of demographics or locations that are early adopters of new technology." Please provide an explanation, including any metrics or scoring components, of how the Companies plan to ensure that chargers "are available to all customers[.]"

Response:

Electric companies play an essential role in siting charging infrastructure (i) where the energy grid has the capacity to support it, and (ii) in areas that may not currently present a good business model or ROI for commercial EVSE providers, such as in disadvantaged communities where EV adoption is low. Key components of the scoring criteria will include (i) Multi-family 24/7 publicly accessible locations near multi-family dwellings (.25 mile radius), (ii) Public L2 24/7 publicly accessible locations at destinations where vehicle dwell-times are estimated to be 2 or more hours, (iii) Public Fast Charging 24/7 publicly accessible corridor locations where fast charging infrastructure gaps currently exist (50 mile radius) per DOE Alternative Fuel Database Center mapping. Full program selection criteria has yet to be developed and will depend on site host participation for final siting to occur.

Attachment 9

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

With respect to the tariffs for this program:

a. Please explain the purpose behind the load control events that will take place in the second and third year of this program, and criteria used to call an event. The tariffs suggest a reduction in the charging rate up to full curtailment for up to 30 minutes per event.
b. Please provide the participant cost of the EVSE expected for a level 2 EVSE.

Response:

The purpose of the residential EV program during the years when load control will be implemented is to investigate the technological, programmatic, and behavior features of a residential EV charging load control program.

a) Load control activities during the second and third years of the pilot will be used to demonstrate use of a smart, networked L2 EVSE to execute load control events, determine the load reduction achieved at different times of day compared to the technical potential, and customer willingness to participate given the opportunity to opt out. No more than 3 events will be called per month during weekdays between the hours of 6-8 am and 4-6 pm. Participants will be notified of events 24 hours in advance via email, text message, or in-app message, and have the option to opt out of the event.

b) Participant cost for purchase and installation of a qualifying L2 EVSE is estimated to be between $1,000-$1,500 with the variation resulting from variable installation costs.

Attachment 10

DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC

Request:

With respect to the tariffs for this program:

a. Please explain how Duke arrived at the number of buses for the program (55 for DEC and 30 for DEP).
b. How many EVSBs does Duke intend to provide incentives for?
c. While participation will be on a first-come-first-serve basis, please explain any limits Duke will impose on public school transportations systems regarding the number of buses one school system can have in the program, or the location of participants within DEC's or DEP's service territory.
d. The tariffs suggest that electric service will be billed under the applicable general service rate schedules. Please provide further detail on which rate schedules will apply (Customer's current schedule or a separate schedule).
e. Please provide some details about the EVSEs that Duke plans to install for this program and the cost to Duke for the EVSE.
f. Please provide the participant costs associated with an EVSB.

Response:

a. The total number of buses in the EVSB program was determined by gauging customer school district appetite and available funding from the VW Settlement over the Pilot term.

b. Duke Energy is proposing to support the deployment of a total of 85 EVSBs.

c. This Program is available to Customers operating public school transportation systems in the Companies' North Carolina electric service territories. No other limits have been proposed by the Companies, but the Companies are open to imposing participation limits on individual school systems to ensure that EVSBs are distributed geographically across the state.

d. The Customer is free to choose to take service on their current schedule or establish a new service under a different schedule. The Companies will consult with Customers to advise the appropriate choice given the number of buses deployed and current load.

e. EVSEs are anticipated to be smart, networked L2 EVSE capable of facilitating bi-directional power flow from the EVSB battery back to the building. For budgeting purposes, the Companies have assumed EVSE plus installation will cost $20,000 per EVSE.

f. The participant costs associated with an EVSB will vary depending on the funding sources used to procure the buses in addition to the Pilot funding. The Pilot is intended to gather data to establish such parameters as participant costs to procure and operate EVSBs and actual operational fuel and maintenance savings. The Companies estimate that procurement and installation of EVSB and supporting EVSE will cost an additional $135-235,000 above the support provided by the Pilot. Participant cost will therefore depend on how much of the additional capital cost will be offset by any VW Settlement funding secured by the participant. Operational costs of an EVSB are estimated to be significantly lower than a diesel school bus, leading to participant savings of approximately $10-15,000 per year.