SIEMENS
Ingenuity for life

Date: November 20, 2019

To: Ms. Kim Jones
Director
North Carolina Utilities Commission
430 North Salisbury Street
Raleigh, NC 27603
Email: kjones@ncuc.net

Dockets: Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's Application for Approval of Proposed Electric Transportation Pilot, **Docket Nos. E-2 Sub 1197 and E-7 Sub 1195**

Re: Siemens Second Statement of Support

Dear Ms. Jones,

Siemens appreciates the opportunity to provide these comments in the above-captioned docket. We respectfully urge the Commission to approve the Electric Transportation Pilots ("Pilots") as proposed in the Duke Energy Carolinas, LLC and Duke Energy Progress, LLC's ("Duke") applications filed March 29, 2019. The Pilots will provide financial, environmental and economic development benefits to North Carolinians including EV owners, ratepayers, schools, and other customer groups.

In these comments, we focus on responding to Public Staff's comments on the following issues, with details provided below:

1. Utility participation in providing EV charging infrastructure is essential to meet the state's targets for EV adoption. This includes ownership and operation especially in those market segments that are not being adequately served by competitive providers (and which are being targeted in the Pilots). Beyond helping to resolve the critical shortage in charging infrastructure that results in range anxiety, utility participation enables capturing of the full range of benefits from EVs.

2. In contrast to claims made otherwise, there is no evidence anywhere – in spite of over 50 utility programs in progress around the country – that utility ownership hurts the competitive market for EV charging. **In fact, utility participation promotes market growth and competition, as evidenced in these many programs.**[1]

3. To protect the ability of consumers to choose their chargers and charging service providers separately as well as the right to switch providers, Duke's programs should require that chargers utilize widely used OCPP communications protocol between chargers and backend data networks. This has been recognized as a best practice in Minnesota and other states. The idea is that charger owners – be they residential, commercial, or otherwise – should be able to switch network providers as easily as one can switch cell phone providers.

4. To ensure that EV drivers can fuel their vehicles at public charging stations as easily as they can at gasoline stations, public chargers should be equipped with credit card chip readers.[2] These are the most secure form of payment. The readers also accept debit and pre-paid cards, enabling consumers to use their preferred form of payment. The goal is to avoid the current proprietary payment systems that require EV drivers to download an app, sign up with each charging provider separately, and have an RFID card from each provider in order to pay for public charging.

Utility Provision of EV Charging Infrastructure, in conjunctions with Third Parties, Will Maximize Benefits and Minimize Costs

Utility participation is needed to capture the full value stack of EV benefits

EVs offer the obvious benefit to their owners (or operators) of providing transportation and to society of reducing GHG and other air pollution. However, EVs also offer important benefits (or can impose additional costs) to the electricity grid, wholesale electricity markets, and integration of both centralized and distributed renewable generation. For the grid, EVs can provide peaking capacity and, thus, act as a non-wires alternative to traditional grid reinforcement when there is a need for additional capacity. For wholesale markets, EVs can provide peaking capacity and ancillary services such as imbalance energy. For renewable generation, EVs can reduce curtailments by using wind and solar energy at times of abundance (overgeneration). We refer to these as the full value stack of EV benefits.

[1] For example, there are 11 approved charging vendors in the EV Charge Network program of Pacific Gas & Electric. *Q3 2019 Clean Transportation Program Advisory Council Meeting, October 16, 2019.*
[2] Either on the charger or on a shared kiosk.

These benefits are widely recognized, but there is less discussion of how to capture the benefits. Capturing the full value stack requires:

- an end-to-end integrated system approach that is only possible via the active involvement and participation by the utility;

- seamless, low-cost, reliable, and efficient integration of EV charging data and operations with utility planning, operational, business, and customer systems; and

- a robust connection with transmission operational and wholesale market systems.

Utility planners can minimize their grid investment requirements if they know where and when EV charging loads are occurring and how those loads will grow over time. Utility operators can maintain reliability by having the same information in near real time, as well as the ability to either control such charging or accurately predict how EV owners (or their third party service providers) will control such charging in response to price signals. Utility customer engagement and charging management software can send price or control signals to smart phones and directly to electric vehicle supply equipment (EVSEs) or third party service providers, as well as allow consumers to program their charging preferences. Utility meter data management systems can use the data from chargers to disaggregate consumption – at the interval level – of EVSEs from the premise to enable application of separate tariffs to the premise owner and the EV. Utility billing systems can use this disaggregated data to calculate bills for EV-only tariffs, incentive payments for demand reductions during peak times, and other financial incentives adopted by the Commission. Utility rate designers can use the data to develop rates that enable EV owners to minimize the cost of charging by taking advantage of low-cost wholesale rates, especially during times of abundant wind and solar power. And because these rates can be EV-only by disaggregating the whole house data, customers can keep their preferred rate for their other-than-EV consumption. Utility demand response program operators can use the EV data to bid peak demand reductions and ancillary services into the wholesale market. The examples cited above are not exhaustive.

Utility participation is needed to minimize EV charging infrastructure costs

Utilities also have important assets and capabilities to reduce the total cost of ownership (TCO) – buying, owning and operating EVs. Capturing the full benefits as described above directly reduces operating costs by minimizing electricity costs, including costs that might otherwise be required to reinforce the grid. Utilities can greatly reduce costs in three key areas: asset ownership and maintenance, EVSEs, and the consumer experience. They can have the greatest ability to reduce these costs when they own EVSEs in those situations not being adequately served by third parties.

A core competency and central business model element for utilities has always been asset ownership and maintenance. They specialize, in part, in the distribution grid, which consists of very large numbers (millions) of widely dispersed devices that must operate safely and reliably with low maintenance costs for periods of decades. EVSEs are exactly this type of asset and, in fact, have many features in common with smart meters (data recording, communications, electronics in harsh environments, etc.). Utilities have the necessary expertise, business processes, and software for deploying, managing, and maintaining these assets. Utilities can achieve scale economies in borrowing, maintenance personnel and systems, customer base, and other areas to that minimize EVSE deployment, ownership, and maintenance costs. Utilities have access to low cost capital. They have the ability to depreciate the assets over long periods of time, because they have long-standing franchises and investors whose expectations are consistent with lengthy depreciation periods. Utilities have the ability to redeploy assets such as EVSEs, if needed, to other customers, because they have very large, diverse, and lasting customer bases. On the maintenance side, utilities have existing field personnel and mobile workforce management systems to provide reliable and efficient services across a widely dispersed service territory. These maintenance capabilities not only reduce costs but also ensure that consumers relying on their EVSE for charging will have rapid and high quality response to a service need – an essential element of North Carolina policymakers providing consumers with the comfort they need to fully rely on an EV as their sole transportation source.

Utilities can play a major role in reducing EVSE costs as well. One way is by procuring larger quantities of EVSEs. Quantity discounts enabled by large scale utility purchases reduced smart meter costs by two thirds virtually immediately.[3] Today's EVSE purchases are in the quantities of up to hundreds; utility procurements could increase that level to potentially thousands. Another way is through standardizing functionality. These standard features allow for interoperability – a key requirement for cost reduction – and reduced risk of obsolescence.

Utilities can also play a major role in minimizing consumer experience costs, a major barrier to EV adoption.[4] For example, utilities can play a key role in substantially reducing concerns and uncertainties for consumers when buying an EV. There are many questions in which the utility is not involved that relate to a specific vehicle's features and performance, but the utility can assist by being the trusted energy adviser regarding EV fueling costs, EVSEs and access to charging infrastructure.

Utility Participation in Provision of EV Charging Infrastructure Animates the Competitive Market for Providing EV Charging Services

[3] - Siemens Testimony, Docket No. UM 1811, Oregon Public Utilities Commission, September 19, 2017.
[4] - "Finding: Most potential PEV customers have little knowledge of PEVs and almost no experience with them. Lack of familiarity with the vehicles and their operation and maintenance creates a substantial barrier to widespread PEV deployment." in "Overcoming Barriers to Electric-Vehicle Deployment," National Research Council, 2013.

The Pilots will stimulate EV adoption by lowering the barrier of range anxiety. This stimulus will lead to greater interest by third parties in investing in Duke's service territory and, thus, greater competition. Because the Pilots are limited in scope and targeted at market segments not well served by third parties today, Duke's participation will not inhibit third party investment. As mentioned earlier, we have not seen an instance of utility participation being a hindrance to private parties – in fact, many third parties have built their businesses on the back of utility, state, or other public funding incentives.

An analogous market is that for energy efficiency products and services. This is a vibrant, highly competitive market across the U.S., one in which Siemens participates. In many, if not most, states, utilities have a major role in the energy efficiency market, a role that has not inhibited and, on the contrary, has greatly promoted competition by significantly increasing the size of the market. In the transportation electrification market, Siemens believes that both utilities and third parties need to participate in the market in order for North Carolina to meet its goals.

Open, Universal Payment Access for Public Chargers is Essential for a Seamless Transition from Fossil to Electric Fueling

Currently, the most common payment methods for EV charging at public locations include pre-enrolled debit/credit cards on proprietary networks, proprietary radio-frequency identification (RFID) cards, and proprietary mobile payment apps. Given these restrictions, many drivers can and do find themselves without a way to pay for their public charging session. In planning North Carolina's public charging infrastructure, it is essential to ensure that the most accessible modes of payment are available.

Siemens supports adoption of open payment standards at public chargers as critical to a seamless consumer transition from fossil to electric fueling that will drive EV adoption. Consumers do not need to download an app, carry an RFID card, and enroll with a service provider to buy gasoline; why should they have to do so for electric fueling? This insight has been reached in a few states, including Connecticut and Massachusetts, that have passed legislation attempting to solve this problem. However, the solution has been frustrated so far in state policy efforts due to a lack of specificity in the requirements. Accordingly, we respectfully suggest requiring public charging infrastructure installed or operated using public funding to have payment options, including a minimum of credit card chip readers.

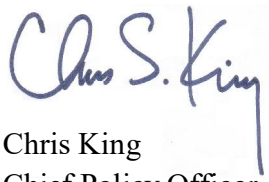
Conclusion

Duke's proposed pilots would constitute a modest but critical step in addressing the several barriers to EV adoption related to the lack of EV charging infrastructure and, therefore, move toward capturing the significant benefits EVs for the state's residents and Duke's ratepayers. Siemens

SIEMENS
Ingenuity for life

respectfully encourages the Commission to consider our arguments in reviewing and approving the Pilots.

Respectfully submitted,



Chris King
Chief Policy Officer, Siemens Digital Grid
chris_king@siemens.com
(510) 435-5189

Cc: Service List **Docket No. E-2 Sub 1197**
Service List **Docket No. E-7 Sub 1195**