September 10, 2020

Ms. Kimberley A. Campbell
Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Raleigh, NC 27603

Re: Docket No. E-7, Sub 1214A
Testimony Summary of NCSEA Witness Justin Barnes

Dear Ms. Campbell,

Pursuant to the Commission's *Order Providing Additional Requirements for Separate Expert Witness Hearings* issued September 2, 2020, please find enclosed the Testimony Summary of North Carolina Sustainable Energy Association Witness Justin Barnes. Please let me know if you have any questions or if there are any issues with this filing.

Respectfully yours,

/s/ Peter H. Ledford

CERTIFICATE OF SERVICE

I hereby certify that all persons on the docket service list have been served true and accurate copies of the foregoing Testimony Summary of NCSEA Witness Justin Barnes 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 10th day of September 2020.

/s/ Peter H. Ledford
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North Carolina Sustainable Energy Association
Summary of the Testimony of Justin R. Barnes
NCUC Docket No. E-7, Sub 1214

Commissioners, thank you for the opportunity to testify before you today. My name is Justin Barnes, and I am the Director of Research at EQ Research LLC. I am appearing here on behalf of the North Carolina Sustainable Energy Association ("NCSEA").

The purpose of my testimony is to propose the establishment of targeted electric vehicle-specific ("EV-specific") charging rate options for both residential and non-residential customers. I use the term EV-specific to refer to rates that apply to EV charging separately from a customer's other non-EV electricity use, and the term "targeted" to refer to rates specifically designed to take advantage of the unique attributes of EV charging load to produce benefits for EV owners and non-EV ratepayers.

With respect to the rationale and justification for targeted EV-specific rates, the case is compelling. Well-designed EV rates that incentivize off-peak charging can produce cost savings for EV owners that help offset the higher up front cost of an EV and the cost of home charging equipment, and produce more equitable rates for EV owners whose charging needs largely coincide with low cost periods for other reasons, such as personal and work schedules. Those same rate designs can produce cost savings for other ratepayers by flattening the load curve, avoiding the need for costly grid investments that might otherwise be needed to accommodate increased EV charging load, and aiding in renewable energy integration. Furthermore, the availability of targeted EV-specific rates is a core element of achieving transportation electrification, which in turn is a core element of North Carolina's Clean Energy Plan developed pursuant to Executive Order 80.

Current rate options available for residential home EV charging are insufficient because they lack an option to have relatively more flexible EV charging load measured and priced separately from whole building load, and the fact that the only time-varying rate option available contains a demand rate component that produces an unbalanced and inconsistent price signal for incentivizing off-peak charging. I recommend the establishment of a rate option that: (1) permits home EV charging to be separately measured, (2) uses a more granular three-period pricing design with a shorter on-peak window while retaining an off-peak window of at least eight hours during all months of the year, (3) limits any incremental fixed charges to the cost of metering necessary to separately measure EV charging load, and (4) produces meaningful cost savings relative to a flat rate after consideration of any incremental metering costs and typical amounts of home EV charging.

For non-residential EV charging, including public charging, insufficiencies in the current suite of rate options center on the facts that the available options either: (1) lack a time-varying price signal, or (2) provide a time-varying price signal principally through demand charges, which tends to produce extraordinarily high effective electric rates for the higher capacity charging units, such as direct current fast charger ("DCFC") stations, that are commonly used for non-residential charging applications. I then describe several options for addressing the issue of demand charges specifically, which include substituting volumetric rate components for the demand charges, establishing limits or caps on demand charges, allowing load aggregation for the purpose of calculating demand charges, and

modifying the application of demand charges to be based on daily maximum demands rather than monthly maximum demand.

I ultimately recommend that Duke Energy Carolinas be directed to deploy a rate for separately measured non-residential EV charging using existing Schedule OPT-V as a base, but with a more granular three-period pricing design with a shorter on-peak window than the two-period design contained in Schedule OPT-V. This rate should either: (1) substitute volumetric charges for the on-peak demand charges, or (2) contain a demand charge limit or cap designed to produce a maximum implied electricity rate that approximates the rate a residential customer would pay to charge an EV under a standard flat rate option such as Schedule RS. Under both options, I recommend that where EV charging takes place in concert with other load behind the same meter, the customer pay a modest, cost-based submetering charge rather than an additional BFC, and that standalone charging units be charged the otherwise applicable BFC.

Thank you again for this opportunity, and I look forward to your questions.