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Jun 30 2021

In the Matter of:)
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Application of Duke Energy) COMMENTS ON PROPOSED
Carolinas, LLC, for Adjustment of) PERMANENT RATE DESIGNS
Rates and Charges Applicable to)
Electric Utility Service in North)
Carolina)

INTRODUCTION

1. NC Justice Center *et al.* support affordable, forward-looking rate designs that properly align opportunities for customer bill-savings with reductions in the utility’s cost of service. These organizations consider DEC’s proposed innovative time-varying rate designs to be one part of a suite of utility options that can help to make utility service more affordable and equitable. When NC Justice Center *et al.* petitioned to intervene in DEC’s 2017-filed rate case (Docket No. E-7, Sub 1146), they noted that they and “their members are...interested in promoting better rate design” along with “increased investments in low-income energy efficiency, demand-side management, rooftop solar, and other clean, distributed energy resources.” These organizations informed the Commission that their purpose in intervening was “to advocate for low-income

customers, smart and equitable rate design, and increased investments in energy efficiency and other clean energy resources.”

2. With those goals in mind, NC Justice Center *et al.* opposed DEC’s effort to increase the fixed, residential Basic Facilities Charge by 51%, from \$11.80 to \$17.79 per customer per month. NC Justice Center *et al.* put forward evidence that shifting the utility’s cost-recovery to unavoidable, fixed monthly charges is unfair to low-income customers, African-American headed-households, and senior citizens, who, on average, consume less than their counterparts. In addition, higher customer charges send a price signal that discourages investments in energy efficiency, conservation, and distributed energy resources and can reduce the potential for more innovative rate designs by locking a larger percentage of the utility’s cost-recovery in a fixed charge that does not vary with changes in usage or customer behavior.

3. DEC’s Proposed Permanent Rates, in contrast, will provide customers who opt-in to the rates with price signals that encourage customers to shift their usage away from more expensive system peaks, resulting in both customer bill savings and utility system savings that should benefit all ratepayers. In addition to supporting the Proposed Permanent Dynamic TOU rates, NC Justice Center *et al.* ask DEC to: (1) take steps to make these new rate offerings more accessible to low-income households; (2) continue to avoid residential demand charges in its residential rate offerings as both difficult to understand and not cost based; and (3) work with stakeholders to provide additional rate offerings that will work for customers to incent EV charging at off-peak times but who would have trouble adopting the Proposed Permanent Rates for their entire household.

I. SUPPRT FOR PROPOSED PERMANENT RATES

4. NC Justice Center *et al.* appreciate the thoughtful work that went into the development and design of DEC's Proposed Permanent Rates, including consideration of lessons learned from the Pilots and further analyses that considered embedded costs, marginal costs, and anticipated changes to the grid over the coming years. Application at pp. 3-4.

5. The Proposed Permanent Rates have the potential to help participating customers save money on their bills by responding to price signals that shift usage in ways that can provide system benefits, thus helping to keep costs low for all ratepayers. As DEC noted in its application, the dynamic pricing TOU pilots "demonstrated the potential for customers to change their consumption patterns in response to price signals, creating bill savings and system benefits" Application, p. 3. The lessons the Company learned from the Pilots reflect best practices for smart rate design articulated by the Regulatory Assistance Project ("RAP"): "[b]y having rates that reflect system value, customers will have the incentive to take action that over time will reduce system costs, and thus benefit all ratepayers."¹

6. NC Justice Center *et al.* support DEC's forward-looking approach to setting the TOU periods because those periods should be enduring. It is difficult to support customer adoption if peak and discount periods are subject to frequent changes.

¹ Jim Lazar & Wilson Gonzalez, *Smart Rate Design for a Smart Future*, Regulatory Assistance Project, p. 17 (July 2015) ("*RAP Smart Rate Design*"), (<http://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-gonzalez-smart-rate-design-july2015.pdf>).

NC Justice Center *et al.* would stress, however, that to the extent that these “forward-looking” peak windows are informed by assumptions about continued robust solar installations on DEC’s grid, the Company should work to make sure that it does not discourage increased solar deployment (both customer-sited and utility scale).

7. When designing these new TOU periods, DEC indicated that it considered both “current conditions” and also “how the system is expected to evolve over the next decade,” considering the “growing impact of solar generation.” Application at 3. In addition, DEC noted that it designed the new TOU periods based in part on “how system conditions are expected to change over the next decade.” Application at p. 10. DEC’s Application suggests that the principle reason for shifting summer peak periods to later in the evening than would be expected from the summer afternoon system peaks that DEC has historically experienced is largely a result of increased penetration of low-cost solar generation. It would be unfortunate if this forward-looking rate design did not deliver anticipated system benefits because there was a slowdown in anticipated solar installations. This could result in summer system peaks that would occur closer to historical afternoon periods as opposed to later in the evenings, which would mean that customers on the Proposed Permanent Rates would receive inaccurate price signals. In other words, it will be important for DEC to facilitate continued robust solar deployment in order for these peak summer evening periods to accurately reflect anticipated summer system peaks that are expected to occur later in the evening.

8. These Proposed Permanent Rates are also a reflection of how flexible load will be increasingly valuable as more intermittent, clean renewable resources are added to the grid. “[F]lexible load — load that can respond to swift changes in the availability of

supply, perhaps in the middle of the day for solar and late at night with wind — becomes cheaper to serve than unvarying loads in systems marked by high penetrations of variable supply.”² In addition, DEC’s Proposed Permanent Rates have the potential to be fair for lower-income customers who opt to participate: “TOU and CPP rates may also be more fair to customers than traditional flat rates, because customers who contribute more to the increased costs of peak usage are made to pay more, while customers who use less of the expensive peak power have the opportunity to save more.”³ The best available evidence indicates that, on average, lower-income households use less than their counterparts.⁴ NC Justice Center *et al.* want to make sure that those customers can take full advantage of the bill-saving opportunities presented by DEC’s Proposed Permanent Rates.

9. NC Justice Center *et al.* support DEC’s decision to include only one peak period per day and to shorten those peaks to three-hour intervals.⁵ These rate design choices should be easier for customers to navigate when changing consumption patterns to achieve potential bill savings and align behavior with system benefits. But these peak periods will be easiest for customers to navigate when integrated with smart thermostats and other technology that can automatically shift load off of peaks and announced critical peak periods (“CPP”). DEC itself recognizes the role that “technologies” can play in

² Mark LeBel & Frederick Weston, *Demand Charges: What Are They Good For?*, Regulatory Assistance Project, p. 4 (Nov. 2020) (“*RAP Demand Charges*”) (<https://www.raponline.org/wp-content/uploads/2020/11/rap-lebel-weston-sandoval-demand-charges-what-are-they-good-for-2020-november.pdf>).

³ *RAP Smart Rate Design* at p. 17.

⁴ Direct Testimony of John Howat, Docket No. E-7, Sub 1146, Official Transcript, Vol. 8, pp. 25-29 (March 7, 2018).

⁵ *RAP Smart Rate Design* at p. 44 (“Concentrating peak-related charges into as few hours as possible produces a better customer response and actually tracks closer to underlying increased costs, which are, themselves, concentrated into relatively few hours of the day and year”).

changing those consumption patterns in ways that result in those anticipated benefits.

Application, p. 10.

10. NC Justice Center *et al.* appreciate DEC's objective to make the Proposed Permanent Rates work for low to moderate income households. Application at p. 8. NC Justice Center *et al.* likewise want to make sure that low-income customers can take advantage of the bill-saving opportunities from these Proposed Permanent Rates. For this reason, DEC should consider ways to offer enabling technologies free of charge (or at steeply discounted rates) to low-income customers to help make sure that they have a fair opportunity to take advantage of the bill-saving opportunities that these new rates present. This effort would most likely come from the Company's DSM/EE programs and could include an offering for free smart thermostats so that income-qualified customers could take advantage of the "bring your own thermostat" (BYOT) offering, or making available timers for shifting electric hot water heaters off of peak periods. Automating load shifting to discount periods (or at least off of peak times and CPP) can provide significant system benefits and enable lower-income customers a better opportunity to participate in this forward-looking rate design in ways that save them money on their electric bills. RAP has concluded that "advanced pricing works best with technology enhancement to enable automated response to higher prices that can tie directly into time-differentiated prices" and that "...enabling technologies (in home displays, smart phone applications, smart thermostats, and appliances) enhance price responsiveness."⁶ But without proactive steps from the Company, the upfront costs of those enabling technologies will likely keep them out of reach for low-income households.

⁶ *RAP Smart Rate Design*, at pp. 16-17.

11. NC Justice Center *et al.* also believe that it will be critically important for DEC to train its customer service representatives to explain the new Proposed Permanent Rates and to provide easy to understand on-line tools for comparing current usage patterns to new rates (shadow billing, etc.). Some of RAP's recommendations for rolling out new rates such as DEC's Proposed Permanent Rates are worth considering: "Utility regulators will need to adopt time-varying and dynamic rate designs, with consumer education, shadow-billing during a pre-deployment phase...and excellent customer support throughout."⁷ NC Justice Center *et al.* recognize that DEC does not propose promoting the Proposed Permanent Rates until more work is accomplished through the on-going Comprehensive Rate Design Study. Application at p. 13. But given that these new rates will be made available to the public, it is not too early to prepare tools that will allow for understanding of how a customer's current usage would fit the Proposed Permanent Rates.

II. ADDITIONAL REASONS TO REJECT RESIDENTIAL DEMAND CHARGES

12. DEC reported that one lesson learned from the Pilots was that it is difficult for "residential customers to understand the demand charges" and that "78% of residential customers did not understand the demand charge component as structured in the pilot." Application at pp. 3 & 7. NC Justice Center *et al.* agree that residential demand charges are difficult to understand and support DEC's decision to remove demand charges from the Proposed Permanent residential rates. But NC Justice Center *et al.* would stress that residential demand charges are not simply difficult to understand,

⁷ *RAP Smart Rate Design*, p. 19.

they are not warranted from a cost-causation perspective. Given the on-going work of the Comprehensive Rate Design Study, it is important to consider additional reasons why DEC was right to not include demand charges in the Proposed Permanent residential rates.

13. DEC's Proposed Permanent Rates reflect superior rate design over residential rates with demand charges: "Time-varying rates, including TOU rates and critical peak pricing, are more efficient than peak window demand charges."⁸ NC Justice Center *et al.* agree that the Proposed Permanent Rates for residential customers better reflect how to design smart electric utility rates than would rates with a demand charge.

The key consideration is aligning customer behavior with minimizing system costs:

Rate design should ensure that the actions customers take to minimize their own bills are consistent with the actions they would take to minimize system costs. The nitty-gritty of designing rates in this framework is how to fairly and efficiently reflect marginal costs in prices. The best way to conceptualize this is to examine how the customer responds to a given rate design — both its form and its magnitude. An efficient rate design will lead to customer behavior that optimizes system costs.⁹

Demand charges for small users of electricity, like individual households, do not typically lead to customer behavior that optimizes system costs:

in addition to not reflecting the customer's contribution to utility costs, billing on the customer maximum demand does not effectively encourage customers to reduce their contribution to costs, and may actually encourage customers to move load from the times of their individual maximum demands to times of high system loads and costs."¹⁰

⁸ *RAP Demand Charges* at 7.

⁹ *RAP Smart Rate Design* at p. 19.

¹⁰ Paul Chernick, John T. Colgan, Rick Gilliam, Douglas Jester, & Mark LeBel, *Charge Without a Cause? Assessing Electric Utility Demand Charges on Small Customers*, Electricity Rate Design Review Paper No. 1, p. 4 (July 8, 2016) ("*Charge Without a*

14. Demand charges are not only hard to understand, they are extremely difficult for residential customers to manage and end up sending the wrong price signal. The price signal sent by a demand charge is to minimize how many household electric appliances are simultaneously operating in ways that may do nothing to reduce demand costs imposed on the system. This is because there is generally a poor correlation between any one customer's simultaneous peak demand and the non-coincident peak demand of the shared distribution grid infrastructure that serves any given customer.¹¹ In addition, the practical result of a demand charge is an additional fixed charge that reduces a customer's incentive to conserve electricity, shift volumetric usage off of system peaks, invest in energy efficiency, or take advantage of other distributed energy resources.¹² NC Justice Center *et al.* stress that difficulty understanding demand charges is not the principle reason to reject residential demand charges as a general matter.

III. PROPOSED PERMANENT RATES GOOD START FOR EV CHARGING

15. NC Justice Center *et al.* agree that the discount windows in the Proposed Permanent residential rates should work to encourage EV charging away from system peaks. At a minimum, these Proposed Permanent residential rates are likely to be a better alternative than other existing utility rate offerings because of the predictable and regular discount pricing windows when customers could set their electric vehicles to charge. NC Justice Center *et al.* would ask the Company to continue working with stakeholders to

Cause?”) (https://votesolar.org/wp-content/uploads/2020/12/Charge-Without-CauseFinal_71816.pdf).

¹¹ *RAP Demand Charges* at p. 18 (providing an illustrative example of the loads of 10 residential customers on a shared line transformer during a summer day, which also demonstrates how load diversity determines the need for sizing of shared distribution grid infrastructure).

¹² *Charge Without a Cause?* at pp. 7-8.

develop additional EV-specific rates that could be an option for customers whose specific circumstances may not lend themselves to switching their entire household to the Proposed Permanent Rates, but who would otherwise welcome shifting their EV charging to off-peak time periods or would consider enrolling in a managed charging option that allowed the utility to ensure that EV charging is optimized to avoid localized system constraints or system peaks. Such additional rate-design options will be important to help integrate EV charging in ways that avoid costly utility system upgrades and that are suited to different customer situations.

CONCLUSION

NC Justice Center *et al.* support the Proposed Permanent Rates for residential customers and look forward to working with DEC on taking steps to make sure that these innovative new offerings are accessible to low-income customers and that additional options for EV charging are considered in the Comprehensive Rate Review.

Respectfully submitted this 30th day of June, 2021.

s/ David Neal
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CERTIFICATE OF SERVICE

I certify that a copy of the foregoing COMMENTS IN SUPPORT OF DUKE ENERGY CAROLINA'S PROPOSED PERMANENT RATE DESIGNS has been served on all parties of record by electronic mail.

This the 30th day of June, 2021.

s/ David L. Neal