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Dec 21 2018

December 21, 2018

VIA ELECTRONIC FILING

M. Lynn Jarvis
North Carolina Utilities Commission
4325 Mail Service Center
Raleigh, North Carolina 27699-4300

**RE: Duke Energy Carolinas, LLC Rate Design Report
Docket No. E-7, Sub 1146**

Dear Ms. Jarvis:

Pursuant to Ordering Paragraph 29 of the Commission's June 22, 2018 *Order Accepting Stipulation, Deciding Contested Issues, and Requiring Revenue Reduction*, I enclose Duke Energy Carolinas, LLC's Report on Plans for AMI and Customer Connect-Enabled Rate Design, for filing in connection with the above referenced matter.

Thank you for your attention to this matter. If you have any questions, please let me know.

Sincerely,

A handwritten signature in black ink, appearing to read 'Lawrence B. Somers', written over a horizontal line.

Lawrence B. Somers

Enclosure

cc: Parties of Record

Duke Energy Carolinas, LLC's Report on Plans for AMI and Customer Connect-Enabled Rate Design
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Introduction

On June 22, 2018, the North Carolina Utilities Commission entered its *Order Accepting Stipulation, Deciding Contested Issues and Requiring Revenue Reduction* in Docket Number E-7, Sub 1146. In Ordering Paragraph No. 29, the Commission held that:

.. within six months of the date of this order, DEC shall file in this docket the details of proposed new time of use, peak pricing, and other dynamic rate structures that will, among other things, allow ratepayers in all customer classes to use the information provided by AMI to reduce their peak time usage and to save energy.

In response to that ordering paragraph, Duke Energy Carolinas, LLC ("DEC" or the "Company") provides the following information to inform the Commission of the Company's status on major corporate initiatives; establishes the Company's rate design mission and vision; and establishes a timeline for introducing new rate designs and capabilities to be offered to all classes of customers. It is important to note that a successful rate design requires: (1) sufficient meter data to support billing, (2) a billing system capable of billing the rate, (3) rate designs that are reflective of cost causation thereby incenting cost effective shifting of usage, and (4) customer tools that allow customers to view and understand their usage on a detailed level to better support load shifting and promote energy consumption awareness. Even though a rate design may be technically sound, it will not be effective if customers don't understand how to take advantage of the load shifting opportunities offered with the design.

The Company is mindful of the Commission's stated expectation that DEC deliver on its promise to deliver additional customer products and services that AMI meters can enable. Future new rate designs will allow customers to use information provided by AMI meters to reduce their peak time usage and to save energy, as well as to have increased control and convenience. The Company is fully committed to providing new rate structures and incorporating customer and stakeholder input into the process. As set forth herein, the limitations in the antiquated existing customer billing system are challenging the timing and process to provide new rate structures in the short term. Despite these challenges, and as set forth below, the Company commits to filing, at the time of its next rate case or within 9 months – whichever occurs earliest, at least two new pilot rate designs - one applicable to residential service and the other to small general service.

Background

In the previously mentioned docket, the Company provided the testimony of witnesses Pirro, Hunsiker, and Schneider. This section will highlight the scope of their testimony as it relates to rate design and related capabilities.

Company Witness Pirro responded that the Company will consider new rate designs after full AMI deployment, which is expected by mid-2019. Tr. Vol. 19, p. 87. As the Company continues deployment of AMI and begins implementation of new billing infrastructures, the Company will evaluate all potential future rate designs, including dynamic rate designs, and will assess the approach or combination of approaches that cost-effectively meets customer interests and demand response objectives.

Witness Pirro also responded to witness Alvarez's suggestion that a collaborative would be beneficial in developing time-varying rate designs, by reiterating that the Company highly values customer input in

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evaluating both current and future rate designs. Id. at 88. He explained that the Company routinely discusses its rate design with members of the Public Staff and customers, and that it is preferable that such input be received on an on-going basis, rather than awaiting a group meeting to be certain this guidance is considered in the decision-making process with respect to future rate designs and requirements for supporting infrastructures. Id.

Witness Pirro further explained why it would be premature to offer a specific AMI-enabled rate design in this proceeding. Id. In addition to the fact the AMI technology and new billing system infrastructure has not been implemented yet, he testified that it is important to evaluate each rate design in conjunction with other demand response options that seek to shift customer consumption. Id. He explained that all customer options need to be evaluated to achieve the most dependable load response at the lowest cost to customers. Id.

In its discussion regarding the above sections, the Commission stated:

The Commission agrees that it is premature to offer specific AMI-enabled rate designs in this proceeding since the infrastructure underlying such rate design is not yet available. The Commission concludes, however, that it is appropriate for DEC to evaluate new rate designs that will, among other things, allow ratepayers in all customer classes to use the information provided by AMI to reduce their peak time usage and to save energy.

In his direct testimony, Company witness Pirro explained that DEC was not proposing any innovative peak time pricing rate designs or offering real time price signals in this proceeding. Tr. Vol. 19, p. 58. Witness Pirro explained that DEC continues to review and analyze rate designs that offer customers opportunities to respond to price signals to achieve a lower cost for electric service. Id. As described in the testimony of witness Hunsicker, the Company is upgrading its billing system infrastructure to better support these types of designs. Id. Also, as explained by Company witness Schneider, DEC is in the process of deploying AMI that will provide the level of data that is required to bill these innovative designs.

As explained by witness Pirro, full AMI deployment is expected for DEC North Carolina in approximately mid-2019. Full deployment of the new billing system, "Customer Connect", for DEC North Carolina is anticipated to be September 2022.

Witnesses Pirro, Hunsicker, and Schneider established that full functionality of the various systems is required to be able to offer new rate designs to customers whereby they can make intelligent choices and save money on their electric bills.

While new rate designs could be created based upon load research data, ideally the Company would have a full two years of AMI data to be able to properly analyze load shapes and attendant cost studies in support of new designs. Currently, load research is available for each of the customer classes, but historically it has been intended more toward the development of class cost allocation and was used by rate design primarily for the establishment of broad rate classes. Additional market segmentation may be possible with additional data provided by AMI. The additional data and infrastructure, coupled with other market metrics such as appliance saturation, will enable the Company to analyze customer behavior and propose innovative rate designs far beyond previous capabilities. In addition, the ability to

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analyze hourly data should enhance quantification of demand response initiatives and more closely integrate customer behaviors with capacity planning.

With Customer Connect slated for completion in DEC for September 2022, the Company should have ample time to analyze two years of meter data, develop proposed designs, consult with customer groups and intervener groups, and propose final designs to the Commission that provide rate design choices of interest to customers.

Current Availability of Time-of-Use and Demand Response Programs.

DEC currently has available to its customers several time-of-use and demand response program offerings. Rate RT is available to the residential class. Rate RT is a time-of-use rate with distinct summer and winter periods with on and off-peak prices for energy related charges and on-peak demand charges. In addition, the PowerManager program is a demand response program available to residential customers offering a bill credit if the customer allows the Company to manage air conditioning load which reduces the individual customer's and the Company's peak demand.

For larger commercial and industrial customers, DEC has Rates OPT-E and OPT-V. Each of these rates are time-of-use rates with distinct seasonality and on- and off-peak pricing. OPT-E is an energy based option while OPT-V incorporates demand charges into its pricing mechanism. OPT-V is a popular rate among commercial and industrial customers with \$1.5 billion of sales under the schedule. In addition, PowerShare is a demand response option for non-residential customers which, during times of need, the Company can invoke to reduce the customers demand and therefore the Company's overall demand as well. This also is a very successful program with over 183 MW under contract in DEC NC. Finally, Schedule HP offers larger customers rates that vary each hour to reflect DEC's cost based on a day-ahead forecast. This design is currently our best match with marginal cost principles, but is complex and difficult to administer with less sophisticated smaller load customers.

OPT-V is also available to customers under Rate SGS, which is a rate for smaller commercial customers with demands of 75 KW or less.

In short, the Company currently has a wide variety of options, both time-of-use and demand response programs, for many of our customers.

Of course, all customers have available to them a variety of conservation programs or self-imposed conservation that can reduce their energy bill whenever they choose.

Limitations of The Current Billing System and Metering Infrastructure

Currently the Company is installing infrastructure including new meters (AMI), a meter data management system (MDMS), and the new Customer Connect system. AMI deployment is not complete but is slated for full deployment in mid-2019. Further MDMS development will be required to accommodate the provision of billing determinants supporting any new designs. Finally, the Customer Connect system is more than just a billing module. Significant website access will be part of its development to provide customer access to more detailed meter information. This website is intended to allow customers to make informed decisions regarding rate options. It's envisioned that customers

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will be able to access personal meter data to make bill comparisons and select an available rate schedule most suited to their needs. This level of development will not be complete until 2022.

DEC Commitment and Mission

DEC is committed to providing new rate options to its customers. However, attempting to provide these options prior to the full deployment of AMI and the Customer Connect system would not be cost-effective and detract from completion of the Customer Connect system due to the re-deployment of IT resources.

The new rate designs DEC intends to offer and deploy to our customers have the explicit goal of better reflecting cost causation. It is also anticipated that by offering customer options the customer experience will be enhanced and improved as it relates to pricing options. The improved customer experience will then contribute to the Duke Energy goal of improving our customer satisfaction. We hope to not only emulate, but surpass those companies currently ranked in the top quartile. Along with new rate design offerings, we will enhance the customer experience using the internet, social media, and mobile apps to inform, educate, and help our customers decide how Duke Energy pricing options and other products and services best meet their energy needs.¹ To address the improved customer experience goal, Duke Energy will focus on the following elements of long-term strategy.

- **Provide Choices**

Duke Energy will offer voluntary rate design options to customers that better align with cost causation and allow greater choices and control over their electric bills, including, but not limited to, time-differentiated and dynamic pricing. These choices will be developed to integrate with current DSM offerings, system characteristics, and customer preferences that recognize the changing characteristics of system load due to technology adoption. Although future analysis may suggest otherwise, we anticipate multiple rate offerings being developed for each class.

- **Enhance Pricing Signals**

Creating improved pricing signals within new and current rate offerings will emphasize a two-fold purpose:

- To provide appropriate cost-based price signals (i.e., time differentiated and dynamic pricing options possibly including demand charge elements) to the customer allowing them the opportunity to efficiently consume energy, or not, as they determine to be appropriate.
- To balance the utility's embedded and marginal costs.

- **Support Technology Infrastructure Investment**

Duke Energy will utilize the capability of the advanced metering deployments to enable new pricing and product offerings and support customer technology adoption. Using interval

¹ Many of these are being considered, or are in development, but not available today.

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information available will allow customers to more clearly evaluate the impacts of technology adoption including interactive services that may account for features of the customer's rate.

- Prepare for the Future

While beyond the scope of our initial development efforts, the future will likely dictate that we have a continuing evolution of pricing well into the future.

Some of the current designs and prospective designs DEC will review are depicted in the following graphic:

DEC NC Rate Designs		
Residential	Small Commercial	Large Commercial / Industrial
<ul style="list-style-type: none">• Base Residential Tariffs (Rates RS & RE)• <i>Current TOU Rate RT (Redesigned)</i>• <i>Fixed Bill</i>• <i>Variable Peak Pricing</i>	<ul style="list-style-type: none">• Base Commercial Tariff (Rate SGS)• <i>Time of Use</i>• <i>Variable Peak Pricing</i>	<ul style="list-style-type: none">• Base Tariffs (Rates LGS & I)• <i>Time of Use</i>• <i>Variable Peak Pricing</i>• Rate OPT-V & OPT-E (TOU)• Real Time Pricing (Rate HP)

Italics: Future Rate Designs

Current Research Efforts

DEC is currently working with EPRI to study various rate design features through a multi-utility research project which incorporates TOU, flat rate, fixed bill, and demand charge option concepts among other rate design options. Our intention is to utilize this research in conjunction with other information highlighted in this report to assist in new designs.

Pilot Programs

In the absence of complete AMI data and full deployment of Customer Connect, the Company commits to filing, at the time of its next rate case, at least two pilots. One pilot would be applicable to residential service and the other to small general service. Due to the limitations with DEC's existing customer billing systems, these new pilot rate design offerings will require manual billing by DEC personnel for

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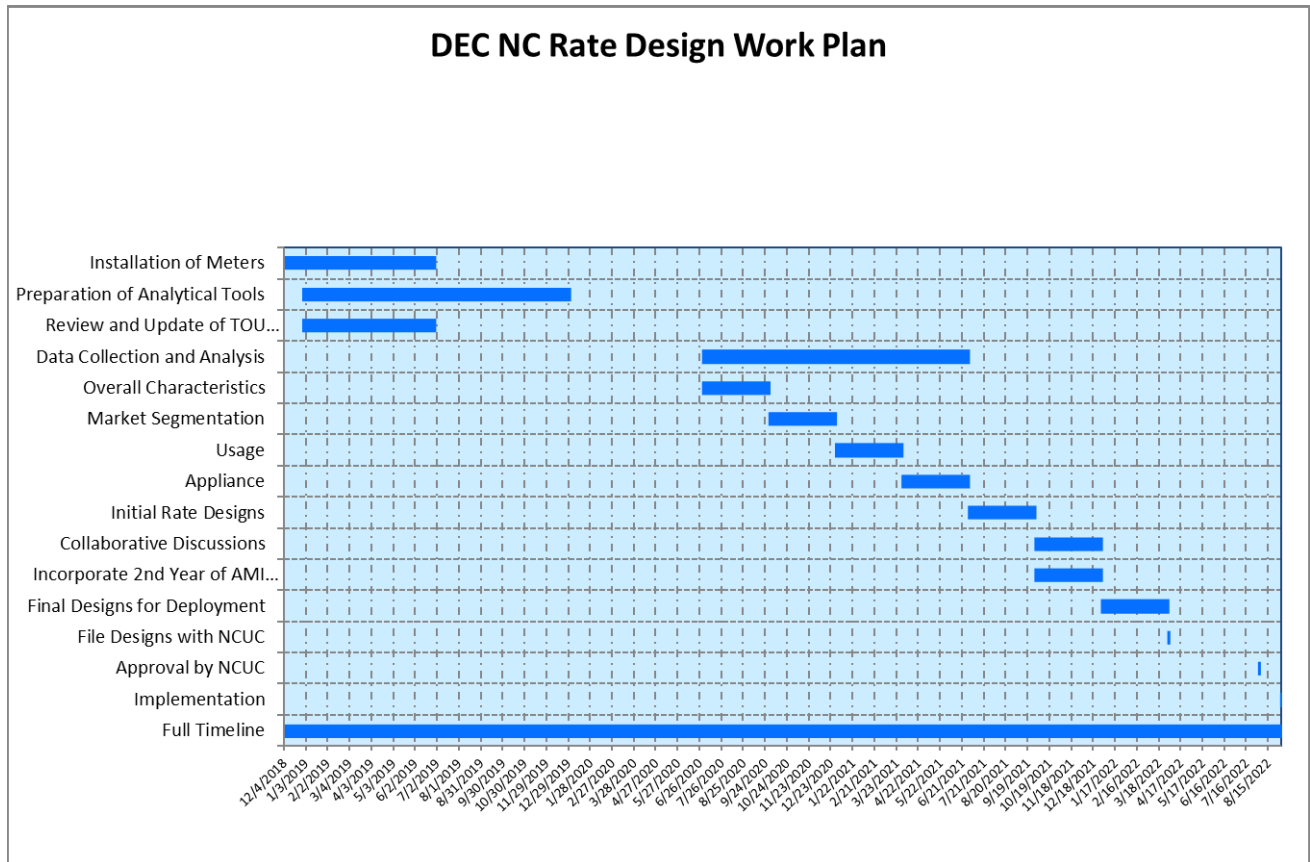
each participating customer. The considerable additional time-consuming and expensive efforts to implement the pilot programs prior to the deployment of Customer Connect is a significant factor in DEC's proposal. These pilots will explore more leading-edge rate designs intended to carry rate design at Duke Energy into the future.

Timeline for the Development and Offering of New Rates

Based on the foregoing discussion, and assuming AMI and Customer Connect programs remain on schedule, the following schedule will be followed. DEC will provide annual reports (unless directed otherwise by the Commission), to describe the progress being made on new and innovative rate designs for DEC's customers including the following elements:

- Discussions on best approach to new rate introduction
- Education information feedback development
- Customer experience development, journey map
- Voluntary or default TOU rate design and review
- Initial new rate development
 - Integration of new peak time periods consistent with avoided cost periods
 - Technology integration that can inform customers of peak usage and communicate pricing changes during those time periods
- Focus groups
- Final designs for submission to the Commission

The above tasks highlight several behind-the-scenes steps necessary to improve the overall customer experience with respect to rate design. The following graph depicts the timeline for specific tasks more pertinent to the analytical design of the rate.



Conclusion

DEC is committed to providing new pricing options for all its customers. However, the current status of AMI, the Customer Connect system, customer meter data access tools, and a new rate design implementation strategy substantially inhibits our ability to make new rate offerings available beyond pilot programs at this time. The Company will commit its best efforts to remain on track and conform to the timetable previously described.

CERTIFICATE OF SERVICE

I certify that a copy of Duke Energy Carolinas, LLC's Rate Design Report, in Docket No. E-7, Sub 1146, has been served by electronic mail, hand delivery or by depositing a copy in the United States mail, postage prepaid to the following parties:

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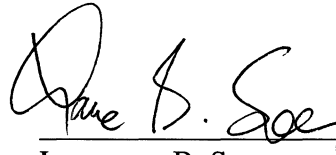
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This the 21st day of December, 2018.

A handwritten signature in black ink, appearing to read "Lawrence B. Somers", is written over a horizontal line.

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