

**STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH**

DOCKET NO. E-7, SUB 1115

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of	
Application of Duke Energy Carolinas, LLC,)
for Approval of Advanced Metering)
Infrastructure Opt-Out Tariff)
	ORDER REQUIRING FURTHER
	STUDY AND ADDITIONAL
	INFORMATION

BY THE COMMISSION: On July 29, 2016, Duke Energy Carolinas, LLC (DEC) filed an application in the above-captioned docket for approval of a Manually Read Meter Rider (Rider MRM) to be paid by DEC customers who choose not to have DEC install advanced metering infrastructure meters (smart meters) to measure their electric service.

In summary, DEC stated that it has installed smart meters to serve about 25% of its customers in North Carolina and South Carolina and is engaged in ongoing projects to install smart meters to serve more customers. DEC noted that some customers have expressed concerns about having a smart meter installed at their premises. DEC stated that it is attempting to respond to those concerns by offering a standard meter option with the meter being read manually by a meter reader visiting the customer's premises. Further, DEC stated that this option would be limited to residential customers and nondemand metered nonresidential customers served under the Small General Service Schedule SGS.

In addition, DEC stated that to date it has allowed customers having concerns about smart meters to continue to be served by advanced meter reading (AMR) meters that are read remotely by drive-by readings. However, under DEC's proposal those customers will be required to change to smart meters or pay the proposed charges. The charges proposed by DEC are an initial set-up fee of \$150.00 for installation of a manually read meter, and a monthly fee of \$11.75 for reading the meter and billing the customer.

On August 11, 2016, the Commission issued an Order Requesting Comments and Additional Information Regarding Proposed Smart Meter Opt-Out Charges (Scheduling Order). The Scheduling Order established dates for interested parties to intervene and to file comments and file reply comments, and required DEC to file responses to 17 questions posed by the Commission.

On August 23, 2016, the North Carolina Sustainable Energy Association (NCSEA) filed a petition to intervene in this docket. On August 25, 2016, the Commission issued an Order granting NCSEA's petition.

On September 19, 2016, DEC filed its verified responses to the Commission's questions posed in the Scheduling Order. On September 22, 2016, DEC filed supplemental information in response to the Commission's questions.

On October 24, 2016, initial comments were filed by the Public Staff and NCSEA.

On November 28, 2016, reply comments were filed by DEC.

In addition, more than seventy statements of consumer position concerning DEC's proposed Rider MRM have been received in this docket by the Commission.

Summary of Comments and Reply Comments

Public Staff

The Public Staff states that it supports the availability of a smart meter opt-out policy, and believes that it is appropriate for DEC to recover the incremental costs of implementing such a policy through a one-time enrollment fee and an ongoing monthly fee. In addition, the Public Staff states that it conducted discovery on DEC's proposed tariff and generally agrees that the proposed fees are cost-based and calculated accurately. However, the Public Staff raises questions that it has based on the data provided by DEC. The Public Staff's questions concern DEC's assumptions about the opt-out participation rate, as well as the proposed duration of the Rider MRM fees. As a result, the Public Staff recommends that DEC be required to file quarterly reports of the number of customers who have received a smart meter and the number of customers opting out, and that DEC should include in any subsequent rate case filing an analysis of its forecasted versus actual experience with smart meter opt-outs. Moreover, the Public Staff recommends that at least every five years DEC's Rider MRM charges should be reviewed to determine (1) whether a change to the rate is appropriate given expected future information technology (IT) and Business Project Resource Costs as well as changes in other expected incremental costs, and (2) whether separate rates should be established for customers opting out within the initial five-year period and those opting out in future years.

In addition, the Public Staff opines that DEC should modify its proposed Rider MRM to address three circumstances: (1) a customer who initiates service at a premise that was previously opted-out of a smart meter and does not want to keep the manual meter should not incur the one-time setup fee when establishing their account with DEC; (2) a new customer establishing service where the previous customer opted-out of smart metering, and the new customer also wants to opt-out of smart metering, or any customer who for technical reasons cannot be metered using a smart meter, should not be assessed the one-time setup fee; and (3) a customer electing to opt-out of smart metering who may have a hardship paying the one-time setup fee should be given an opportunity to make payment arrangements with DEC over a period of time.

Further, the Public Staff recommends that DEC update its website regarding its metering guidelines and smart metering technology, and provide clear information that sets out the steps by which a customer may obtain information regarding Rider MRM via a weblink or phone number that will connect the customer with a person who can discuss the customer's concerns.

The Public Staff also questions DEC's proposed criteria that would limit the eligibility of general service customers to those who use less than 3,000 kilowatt hours (kWh) and have a demand of less than 15 kilowatts (kW) per month. The Public Staff states that it would be more appropriate to eliminate the energy and demand thresholds for Rider MRM, and instead limit opt-out to customers who take utility service under a rate schedule that does not require a demand meter or does not differentiate energy charges between on- and off-peak periods. The Public Staff states that this would likely limit Rider MRM to residential service under Schedules RS, RE, and ES, and nonresidential service to nondemand metered service under Schedule SGS, and basically achieves the same result as DEC has proposed, without stating the load limits in the tariff itself.

In addition, the Public Staff states that it generally agrees with DEC's response to Commission Question Nos. 9 and 11 that the use of the Equal Payment Plan, self-reading options, or dedicated phone line options may be impractical in some cases and result in additional administrative costs, uncollectibles, and other unanticipated consequences. Nonetheless, the Public Staff recommends that DEC continue to explore other reasonable options that minimize DEC's cost of manually reading the meters of opt-out customers without incurring costs for the remainder of its customers.

The Public Staff notes that approximately 549 customers have been bypassed in DEC's current smart meter deployment, and that in 21 instances customers first had a smart meter installed, but then requested its removal. These 21 customers were charged a \$50 fee for the replacement of the smart meter with a drive-by meter, pursuant to Paragraph 4 of Leaf D of DEC's service regulations. The Public Staff opines that these 21 customers should receive a \$50 credit on the \$150 Rider RMR set-up fee. However, DEC has indicated that these 21 customers will be required to pay the full \$150 setup fee proposed in Rider MRM. DEC bases its position on the fact that the current AMR (drive-by) meter in use by customers electing to opt-out of smart metering will have to be replaced with a fully disabled smart meter, at a cost to DEC of \$150, and DEC will have to adjust those customers' accounts to accommodate manual meter readings.

In addition, the Public Staff recommends that DEC allow all customers who were bypassed to continue to receive service utilizing their current metering equipment for the remainder of its useful life before being required to either receive a smart meter or participate in Rider MRM. This is based on the Public Staff's understanding that the majority of the customers that are on the bypass list currently have a drive-by meter, which uses a radio frequency (RF) transmission and cannot be configured to have the communicating radios disabled. As the majority of customers objecting to smart meters have concerns about RF emissions or data being transmitted over RF, the continued use

of their current drive-by meter does not address their concerns regarding RF emissions, but allows them to continue their service as it is currently provided.

With respect to DEC's response to Commission Question No. 6 regarding customer concerns about the loss of functionality or ease of access to electricity usage data as a result of having a smart meter installed, the Public Staff does not agree with DEC's proposed solution, which is to remove the displays on meters so as not to display conflicting information. Rather, the Public Staff recommends that the Commission require DEC to take steps to ensure that all smart meters display basic real-time information consistent with the terms of the customer's applicable rate schedule. For basic schedules, this information would include the cumulative kWh, while for time-of-use schedules, the information would include the kWh, and kilowatts if applicable, of each time period (on-and off-peak, and shoulder peak periods), as well as the monthly metered demand. Further, the Public Staff recommends that applicable tariffs should be amended to note that customers opting out of a smart meter would not be eligible for any rate schedule that requires such a meter.

The Public Staff notes that several of the Commission's rules associated with metering and billing for electric utility service date back to the 1950s and 1960s, and, therefore, do not reflect the current engineering and technology now used in electric meters. Accordingly, the Public Staff recommends that the Commission open a generic proceeding in which the rules can be reviewed and revised to accommodate the changing nature of electric service. The Public Staff offers the following examples: (1) Rules R8-10, 11, 12, 13, 14, and 21 may need to be revised to reflect new testing parameters and to ensure consumer confidence; (2) some rules may be obsolete, such as Rule R8-7 that requires utilities to provide an exhibition meter at their local offices to teach consumers how to read their meters; (3) Rule R8-9 regarding meter locations may need to be revised to allow customers to select an alternate location for their meter when due to physical constraints or personal preference they do not wish to have a meter installed on their premise; (4) the rules may need to be revised to address who owns meter data, how the data can be distributed, and privacy issues, although some of these issues may already be addressed in part through federal or state rules, as well as in DEC's Code of Conduct; and (5) there is potentially a need for a rule that addresses consumer rights regarding the ability to independently measure and track their own consumption, or change their usage in response to price signals, or opt-out of certain metering technologies altogether.

Finally, with regard to the health claims raised in consumer statements of position in this docket and in Docket No. E-100, Sub 141, the Public Staff recognizes these consumers' concerns and supports the option to opt out of smart meters. However, the Public Staff believes that these types of concerns are more appropriately regulated through Federal Communications Commission (FCC) rules, standards, and guidelines, or by other bodies with the responsibility and technical expertise to evaluate them. In addition, the Public Staff notes DEC's response to Commission Question No. 5 that DEC's metering hardware complies with all applicable FCC requirements and its RF emissions are a fraction of the types of RF that are emitted by many other household devices in use today. Further, the Public Staff states that the majority of the customers

who have been bypassed by DEC's smart meter deployment have been served for over a decade with a drive-by meter that uses RF transmission similar to that used by smart meters, and that it is not aware of complaints from DEC's customers regarding concerns or health-related issues as a result of their drive-by meters.

NCSEA

NCSEA states that it does not challenge DEC's proposed Rider MRM charges, and that it does not believe that the costs caused by opt-out customers should be spread among all ratepayers. In addition, NCSEA states that it is keenly interested in smart meters based on the efficiency options that they enable. However, NCSEA submits that there are gray areas in the Commission's rules concerning access to data, including: (1) the parameters of DEC's responsibility to provide consumers with access to data that is not sent to DEC's Meter Data Management system; and (2) the most efficient and convenient format for providing consumers with their consumption data. In conclusion, NCSEA requests that the Commission consider whether its current rules enable consumers and utilities to capture all of the benefits provided by smart meters.

DEC's Reply Comments

DEC made the following points with regard to the comments and recommendations of the Public Staff.

- (1) DEC used the best available information in developing its proposed Rider MRM. In particular, its participation assumptions reflect the best available experience within DEC's service territory, other Duke Energy service territories, and other utilities across the nation. With respect to the recovery of billing system upgrade costs, five years was used in Rider MRM to be consistent with the depreciation life of DEC's IT projects. DEC believes that this approach provides a reasonable timeframe for recovery of the incremental costs incurred, and is consistent with the three-year to five-year amortization periods typically approved by the Commission in general rate cases.
- (2) DEC does not oppose revisiting the Rider MRM costs in its next general rate case, or at a minimum within five years, and adjusting the Rider as the Commission deems appropriate. However, DEC does not agree with the Public Staff's proposal to establish present rates for the first five years and separate rates for later opt-out customers. DEC states that the Public Staff's suggestion may be a reasonable outcome, but DEC prefers to evaluate the cost in a future update and decide at that time how future rates should be structured.
- (3) DEC proposes that smart meter opt-out reporting be included in the annual report required in conjunction with the Smart Grid Technology Plans pursuant to Commission Rule R8-60.1. Further, DEC will provide the number of actual customers choosing to participate in Rider MRM at any time requested by the Public Staff or the Commission.

(4) DEC agrees that a customer who initiates service at a premise that was previously opted-out of smart metering by a prior customer, and does not want to keep manual meter reading, will not incur the one-time setup or meter exchange fee when establishing service.

(5) DEC does not agree with the Public Staff's suggestion that Rider MRM should be modified to allow a new customer electing opt-out to start new service at a premise where a manually-read meter was previously installed without paying the one-time fee. DEC states that there is no evidence that a new tenant at a premise that previously requested smart meter opt-out would seek a similar service. DEC explains that because of the manner in which its automated work order system operates, the Public Staff's suggestion would cause DEC to incur additional incremental costs to install a smart meter for the new customer, remove the smart meter and again install a manually-read meter.

(6) DEC does not object to working with customers on a case-by-case basis to set up a payment arrangement for the one-time opt-out setup fee.

(7) DEC agrees to provide updated information on its public website related to smart meters, and states that it has already implemented some changes to address customers' concerns. See Smart Meter page¹ on Duke-Energy.com. Further, after Rider MRM is approved and the customer instructions to participate in Rider MRM are finalized, DEC will outline that information on its website.

(8) DEC does not object to making the Public Staff's recommended adjustments to the Rider MRM eligibility criteria, but notes that the Public Staff's recommendation will not allow customers on time-differentiated rates to participate in Rider MRM.

(9) DEC agrees to explore other reasonable options to minimize the costs of manually reading the meters of opt-out customers without incurring costs for the remainder of its customers.

(10) DEC does not agree with the Public Staff's recommendations that those customers who were initially bypassed and who paid a \$50 fee should be credited that \$50 towards their one-time setup fee under Rider MRM, and allowed to continue receiving service utilizing their current metering equipment for the remainder of its useful life before being required to either receive a smart meter or participate in Rider MRM. DEC states that it has not allowed any customers to opt-out of smart meters to date, but has temporarily bypassed 611 DEC North Carolina customers with unresolved concerns, out of the nearly 540,000 smart meters installed to date. According to DEC, the bypassed customers were made aware of the temporary nature of being bypassed and were advised that they would be contacted again once a smart meter opt-out tariff was approved. Likewise, for the customers that had the meter at their premise exchanged for a

¹ <https://www.duke-energy.com/our-company/about-us/smart-grid/smart-meter>

smart meter and subsequently chose to return to a drive-by meter, each of the 21 DEC North Carolina customers to date electing this option and paying the \$50 service charge for a customer-requested meter exchange were informed that this was a temporary option until such time as a smart meter opt-out tariff was approved. DEC contends that crediting the \$50 service fee towards the one-time Rider MRM set-up fee would result in a subsidy being paid by other customers. Further, DEC states that continuing to offer an older meter technology for a few customers would unduly burden DEC by requiring it to maintain, test, and continue to support unique meters for only a few customers.

(11) For those customers that were temporarily bypassed in areas where the majority of meters have not been exchanged, DEC will allow those customers to keep their current metering equipment until they are again in scope to have their meter replaced with a smart meter. At that time, the customers will be required to receive a smart meter or elect to participate in Rider MRM. For customers that were temporarily bypassed where the majority of the meters in their area have already been exchanged with a smart meter, impacting associated drive-by meter reading routes, they will be required to receive a smart meter or elect to participate in Rider MRM once the tariff is approved.

(12) With respect to the situation raised by the Public Staff regarding smart meters displaying basic real-time information consistent with the terms of the customer's applicable rate schedule, DEC clarifies that this is only an issue for customers on a Time-of-Use (TOU) rate schedule or other non-kWh-based rate schedule with a smart meter who choose to read the billing determinants from the meter versus the Customer Web Portal. For customers with a smart meter on any kWh-based rates, the cumulative master kWh reading is displayed on the meter. In its response, DEC also provides the details of the extensive customer usage information that is available on the Duke Energy Customer Web Portal website, and agrees to investigate the feasibility of a comprehensive systematic solution to updating the displays on the smart meters of TOU customers, and report back to the Public Staff by the end of April 2017 as to the estimated costs involved to implement the solution.

(13) DEC does not object to a separate Commission proceeding wherein the rules associated with metering and billing for electric utility service can be reviewed and revised to accommodate the changing nature of electric service.

(14) DEC agrees with the Public Staff that health related concerns regarding RF are more appropriately regulated through FCC rules, standards, and guidelines, or by other bodies with the responsibility and technical expertise to evaluate them.

In response to NCSEA's comments, DEC objects to the questions raised by NCSEA related to energy usage data in this docket as irrelevant to the topic of smart meter opt-out. However, DEC states that it does not object to reviewing the Commission rules related to customer and third-party access to usage data for potential updates, but

submits that the process to do so should be a collaborative effort with all interested intervening parties in a separate docket.

DEC's Smart Grid Technology Plans

Commission Rule R8-60.1 requires electric utilities to file smart grid technology plans (SGTPs) as a part of their Integrated Resource Plans (IRPs). As with the IRPs, SGTPs are full reports in even-numbered years and updated reports in odd-numbered years. The first SGTPs were filed in 2014. The following is a summary of the information provided in DEC's SGTPs with regard to deployment of smart meters.

October 10, 2014

DEC stated that it began installing smart meters in 2013. DEC listed the advantages of smart meters to include: (1) detection and response to outages more quickly; (2) remote disconnection and reconnection of electric service; (3) reductions in personnel travel; (4) minimizing the need to estimate customer bills; and (5) providing customers with their hourly usage information from the previous day.

DEC stated that its smart meter project was funded in part by a grant from the United States Department of Energy (DOE), and included the placement of smart meters in North Carolina and South Carolina. In addition, DEC stated that the primary objective of Phase 1 of the smart meter project was to eliminate most of the remaining manually read (or walk-by) meters, which were serving mainly commercial and industrial (C&I) customers. DEC noted that by January 2014 approximately 135,000 walk-by meters had been replaced with smart meters. The majority of the walk-by meters were scrapped.

DEC stated that Phase 2 of the project began shortly after January 2014. The primary objective of Phase 2 was to replace 382,000 aging residential AMR drive-by meters with smart meters. As of October 2014, approximately 325,000 smart meters had been installed. At that time, DEC had not made an assessment of the book value of the meters being replaced.

DEC stated that the total estimated cost of the smart meter project through 2014 was \$102 million. These costs consisted mainly of the new meters, communication and network equipment, and contract services for meter exchanges. DEC estimated that the DOE grant would cover about \$25 million of the project costs. In response to Commission Question No. 15 posed in the Scheduling Order, DEC stated that the DOE funding was a matching grant through 2014 under the American Recovery and Reinvestment Act, and that additional funding is no longer available.

Finally, DEC stated that future smart meter deployments would be based on exchanging drive-by meters "in a logical cadence as value is derived and existing meters age towards the end of their useful life." DEC's 2014 Smart Grid Technology Plan, at p. 34.

October 10, 2015

DEC stated that there were a total of approximately 4,700 remaining walk-by meters to be replaced with smart meters, about 3,100 of which were in North Carolina. These were for large C&I customers, PV net metering customers, and load research meters (C&I Project). DEC stated that the deployment planning process was underway, and that completion of the meter exchanges was planned for the second quarter of 2016. Further, DEC stated that the old meters, depending on their condition, would be either returned to inventory and refurbished for reuse, or scrapped. DEC estimated the total capital costs of the C&I Project to be \$1.6 million.

In addition, DEC stated that approximately 26,500 customers with walk-by meters were bypassed in the initial phases of the smart meter project due to their location in rural areas not served by the communications network required for smart meters. However, DEC stated that a 4G cellular direct connect meter had become available to serve these customers (4G Project). DEC estimated that 20,000 of the old walk-by meters were in North Carolina. In addition, DEC stated that the old meters, depending on their condition, would either be returned to inventory and refurbished for reuse, or scrapped. Further, DEC stated that the deployment planning process was underway, and that completion of the meter exchanges was planned for the second quarter of 2016. DEC estimated the total capital costs of the 4G Project to be \$11.9 million.

Moreover, DEC reported that it had begun a limited-scope project to install approximately 181,300 smart meters at residential premises in the Charlotte Metro area, with about 176,700 of those being in North Carolina. DEC stated that approximately 19,000 meters had been exchanged, with completion of the project planned for the second quarter of 2016. It further noted that about half of the old meters would be returned to inventory for reuse, and that the remaining meters had reached their useful life. DEC estimated the total capital costs of the Charlotte Metro Project to be \$32 million.

DEC also included a cost-benefit analysis of each of the above three projects, with some of the costs filed under seal as confidential trade secret information. The analyses showed annual and 15-year cost savings for each project.

October 3, 2016

DEC reported that as of August 1, 2016, nearly all of the walk-by meters in the C&I Project had been replaced by smart meters, with the remaining replacements to be completed by the end of the third quarter of 2016. Further, DEC noted that the capital cost of the C&I Project was estimated to be \$4.88 million through the third quarter of 2016. DEC stated that a small number of specific types of the walk-by meters were being returned to inventory, but that the majority of the walk-by meters were being recycled for salvage value. DEC stated that the book value of the replaced meters as of August 31, 2016, was approximately \$893,000. DEC included an analysis that showed annual and 15-year cost savings for the C&I Project.

With regard to the 4G Project, DEC reported that over 23,000 meters had been exchanged as of August 1, 2016, and that completion of the project was planned for the fourth quarter of 2016. In addition, DEC stated that the capital cost of the 4G Project was estimated to be \$9.69 million. DEC stated that a small number of specific types of the walk-by meters were being returned to inventory, but the majority of the walk-by meters were being recycled for salvage value. DEC stated that the book value of the replaced meters as of August 31, 2016 was approximately \$5,614,000. DEC included an analysis that showed annual and 15-year cost savings for the 4G Project. Based on this information, it appears that the walk-by meters had an average book value of \$244.00 ($\$5,614,000 \div 23,000$ meters).

DEC stated that Phase 2 of the smart meter project was completed in the first quarter of 2015, having installed approximately 401,100 smart meters, with about 313,500 of the smart meters being in North Carolina.

With regard to the Charlotte Metro Project, DEC reported that approximately 177,800 smart meters were installed and the project was deemed completed by July 31, 2016.

Summarizing its smart meter deployments thus far, DEC stated that it has installed approximately 527,391 smart meters in North Carolina, 252,260 of which were installed since filing its 2014 SGTP. DEC stated that the predicted lifespan of the smart meters is 15 years, and that the other meters currently serving customers have a 15-20 year lifespan. DEC included a table that shows that as of September 2016 there are 527,391 smart meters in use in North Carolina, 1,468,954 drive-by meters, and 8,552 walk-by meters.

DEC stated that in 2016 it began evaluating whether it should continue with smart meter deployment in increments or launch a project to replace all drive-by meters. DEC stated that it estimated the capital cost of a full deployment of smart meters to be \$289 million. It would anticipate incurring most of the costs during a three-year ramp-up period, and the remaining costs during a two-year close-out period. Further, it estimated the benefits during these five years to be approximately \$4.5 million in reduced meter reading costs, and \$22.8 million in operating cost savings due to remote order fulfillment. DEC further stated that pending a full deployment it may continue incremental deployment of about 150,000 smart meters per year.

Consumer Testimony and Statements of Position

The Commission received over seventy statements of consumer position in this docket concerning DEC's proposed Rider MRM. The public witness testimony and statements of consumer position were overwhelmingly in opposition to DEC's proposed Rider MRM. In general, there were four grounds stated in opposition: (1) smart meters pose health threats due to the harmful effects of electromagnetic frequencies (EMF) or radio frequencies (RF, collectively RF); (2) smart meters create privacy issues because they produce private usage information about the customer that may be shared by the utility with

marketing entities and other third parties; (3) DEC has not provided sufficient cost information to support its proposed charges of a \$150.00 set-up fee and a \$11.75 per month meter reading/billing fee; and (4) DEC has not shown that smart meters can or will be used by customers to save energy.

With regard to the detrimental health effects of smart meters, customers described numerous conditions experienced by them as a result of exposure to RF emitted by smart meters, Wi-Fi, microwave ovens, cell phone towers and other electronic devices. The conditions described by customers include headaches, hypertension, loss of coherence, loss of sleep, nausea, dizziness and heart arrhythmias. Several witnesses cited studies that have been performed showing that smart meters and similar devices that emit pulsed RF caused persons to develop serious medical problems that they had not previously experienced. One consumer stated that the World Health Organization has designated wireless meters and smart meters as a Class 2b carcinogen. Another consumer testified that the number of people affected by RF is estimated to be between 3% and 15% of the population. Other customers noted the health care costs and loss of income effects experienced by people due to RF. They submitted that these costs far outweigh the cost to DEC to provide walk-by meters to persons that opt out of smart meters, and that requiring customers to pay opt-out charges in order to avoid becoming sickened by smart meters would be extremely unfair.

With regard to existing standards for smart meters, several customers contended that the FCC's standards are inadequate, noting that they were developed based on thermal effects that are different from the non-thermal RF effects of smart meters. One consumer stated that there has not been any direct testing of the health effects of smart meters on people or animals.

Discussion and Decision

Rule R8-60.1 Requirements

Rule R8-60.1(c)(3), subsections (ii), (iii) and (vii), require that SGTPs include the following information, among other things, for technologies currently being deployed or scheduled for implementation within the next five years:

- (ii) The status and timeframe for completion.
- (iii) A description of any existing equipment to be rendered obsolete by the new technology, its anticipated book value at the time of retirement, alternative uses of the existing equipment, and the expected salvage value of the existing equipment.
- (vii) Analyses relied upon by the utility for installations, including an explanation of the methodology and inputs used to perform the analyses.

DEC's 2016 SGTP did not include the above information for future smart meter deployments. It did include limited cost-benefit analyses for the C&I Project and the 4G Project. However, DEC did not submit any 2016 cost-benefit information for its Charlotte

Metro residential smart meter project. In addition, the C&I Project and 4G Project analyses were essentially in the same format as that submitted by DEC for its smart meter deployments as part of its 2015 SGTP update report. The Commission does not view this somewhat summary information as intended by DEC to meet the requirement of subsection (c)(3)(vii) for an analysis relied upon by DEC to initiate a full deployment of smart meters. For example, DEC's 2015 filing did not include an explanation of the methodology and inputs used to conduct the analyses, or the cost of disposing of all of DEC's drive-by meters and other equipment currently used for reading the drive-by meters.

Further, as noted earlier, DEC stated in its 2016 SGTP that in 2016 it began evaluating whether it should continue with smart meter deployment in increments or launch a project to replace all drive-by meters with smart meters, and that pending a full deployment it may continue incremental deployment of about 150,000 smart meters per year. Thus, it appears that DEC has not made a decision to proceed with replacing its existing 1,468,954 drive-by meters with smart meters within the next five years.

As with the IRPs, the SGTPs are intended to provide information to the Commission, rather than being applications for authority to take action. By accepting or approving a SGTP, the Commission signifies its agreement with the planning and limited testing of plans described by the utility in the SGTP. However, as stated in Rule R8-60.1(d), "Any approval of a smart grid technology plan shall not constitute an approval of the recovery of costs or of any specific technology or program associated with the plan."

On March 29, 2017, in Docket No. E-100, Sub 147, the Commission issued an Order Accepting Smart Grid Technology Plans (SGTP Order). The SGTP Order, among other things, noted that none of the electric utilities' 2016 SGTPs included the details required by Rule R8-60.1 for the launch of a smart meter deployment within the next five years. The Commission stated: "As a result, the Commission expects DEC, DEP and DNCP to provide the Commission with the above information, as well as any other required information, in their SGTP filings prior to implementing an incremental or full scale effort to replace existing meters with AMI meters." SGTP Order, at 17.

DEC's work in designing and proposing a smart meter opt-out tariff has been, in large part, at the request of the Commission and Public Staff. The Commission appreciates DEC's and the Public Staff's efforts to address the concerns of a relatively small number of DEC's customers without increasing the rates of DEC's other customers. The Commission also understands that planning for such a major change in utility equipment involves a number of moving parts and, thus, the timing of implementing the plan may change periodically. However, the Commission is concerned that approval of Rider MRM at this early stage of smart meter deployments might be getting the proverbial cart before the horse.

In particular, the Commission is concerned about charging customers a significant up-front and monthly fee for the right to refuse the replacement of existing meters that are serving their purpose and have not reached the end of their useful life while DEC

continues to study and decide whether and when it will fully deploy smart meters. As a result, the Commission will hold its decision on DEC's proposed opt-out tariff in abeyance until DEC informs the Commission, as required by the SGTP Order, that DEC intends to move forward with the deployment of smart meters. In the meantime, the Commission requests that DEC and the Public Staff provide the Commission with additional information on opt-out alternatives. The Commission's goal is three-fold: (1) to allow customers a reasonable opportunity to opt-out of having a smart meter; (2) to ensure that DEC recovers the costs of customer opt-outs; and (3) to explore the possibility of providing opt-out customers with the choice of paying the Rider MRM meter set-up cost and a monthly fee, or an alternative that requires payment for the meter set-up cost but does not require the payment of a monthly fee. Therefore, the Commission requests that DEC and the Public Staff investigate the possibility of the following three alternatives.

Equal Payment Plan

DEC offers customers an Equal Payment Plan (EPP) under which the customer's annual bill is estimated every 12 months, the customer pays one-twelfth of the annual estimate for 11 months, then pays a true-up amount in the twelfth month. Commission Question No. 9 in the Scheduling Order posed the possibility of allowing opt-out customers to participate in DEC's EPP, with the meter being read only annually or semi-annually, perhaps with the customer performing the meter readings and reporting them to DEC. In response, DEC stated that EPP customers receive a bill each month showing the actual monthly reading from the meter, the actual monthly payment amount, the EPP amount, and the difference between the actual and EPP payment. DEC stated that this helps avoid customer surprise at the end of the 11 months of equal payments if the customer's actual usage has varied significantly from the estimated usage. In addition, DEC expressed concern that if meter readings occurred only annually or semi-annually there would be no way for customers or DEC to know if the meter is malfunctioning.

Further, DEC noted that some EPP customers are on rate schedules that have blocks and seasonal differentials, making it nearly impossible to ensure that the customer would be billed appropriately if the meter was only read every six months. Moreover, DEC stated that new rates for riders, such as energy efficiency and fuel riders, are effective at different times of the year, and without actual usage readings it would be impossible to bill the customer the appropriate amount. DEC further stated that it has attempted to offer customers self-reading options in the past that were unsuccessful. Finally, DEC stated that an EPP option for smart meter opt-out customers would require DEC to create an entirely new EPP to attempt to address the issues it identified, and the cost would easily surpass the proposed tariff costs in IT work for the Customer Billing System alone.

The Commission appreciates DEC's concerns about modifying the EPP to accommodate smart meter opt-out customers. Nevertheless, the Commission is not persuaded that the impediments raised by DEC are insurmountable. Rather than modifying the existing EPP, DEC could explore establishing a sub-set of the existing EPP program that fits the needs of opt-out customers. For example, opt-out customers could be encouraged to read and record their metered usage every month to be sure their meter

is functioning properly and to contact DEC for an adjustment to their EPP if their usage is higher than expected. Further, if a customer is recording some or all of his monthly usage readings, the customer could also be required to provide those readings with the customer's annual meter reading report. The incentive to avoid an unexpectedly high true-up bill in the twelfth month should motivate opt-out customers to closely monitor the proper functioning of their meter and their usage. In addition, the guidelines could provide that if a customer fails to report a semi-annual meter reading, or reports a false reading, then that customer will be removed from the EPP, in which event the customer would have to pay the monthly Rider MRM tariff fee in order to avoid using a smart meter.

In addition, if variable block rate schedules are too complicated to fit the opt-out EPP, then DEC could limit self-read opt-out EPP customers to non-variable rate schedules. Further, fuel and other riders do not normally change significantly from one year to the next, so those changes would not appear to create insurmountable barriers to accurately estimating an opt-out customer's EPP monthly payment amount.

The Commission is confident that DEC and the Public Staff can meet the challenges and find a way to make the EPP alternative work. Therefore, the Commission requests that DEC and the Public Staff continue to explore the EPP alternative for smart meter opt-out customers.

Detached Location

Commission Question No. 10 in the Scheduling Order asked about the possibility of attaching smart meters to a pole or other fixture some distance from the customer's home. In response, DEC stated that relocating a customer's meter to a different location on their property is an option that has been offered to customers having concerns about smart meters. DEC stated that the customer is responsible for hiring an electrician to perform the work and for the full costs of relocating the meter base. DEC then places the smart meter on the relocated meter base. As is the case with all customers, the customer is then responsible for all of the wiring between the relocated meter base and the customer's home or business. This appears to be another alternative for DEC to offer to opt-out customers.

Spreading Opt-Out Costs

The annual cost of reading the meter and billing an opt-out customer under Rider MRM would be \$141. In response to Commission Question No. 1 posed in the Scheduling Order, DEC included a chart showing, among other things, that it had received 549 customer objections to DEC's installations of smart meters in North Carolina, which is 0.1% of the total number of smart meters deployed thus far in North Carolina. If the 0.1% of objections to smart meters holds for a full deployment to DEC's approximately 2,000,000 North Carolina customers, then there would be about 2,000 customers who would request to opt out, resulting in an annual meter reading/billing cost of about \$282,000. In DEC's 2016 fuel adjustment proceeding, Docket No. E-7, Sub 1104, DEC's test year (calendar year 2015) North Carolina residential retail sales totaled about

21.25 billion kWh. Dividing the \$282,000 opt-out cost by 21.25 billion kWh would result in a cost of 0.00132¢ per kWh. Thus, for the average residential customer using 1,000 kWh per month, the added cost would be about 1.3¢ per month. Looking at it another way, the \$282,000 annual cost would be about 0.01313% of the annual North Carolina retail residential revenue requirement of \$2,146,818,000 approved for DEC in its last general rate case. See Order Granting General Rate Increase, Docket No. E-7, Sub 1026 (September 24, 2013). Thus, it seems reasonable to also require DEC to consider an alternative that allocates the meter reading/billing opt-out costs per class among all customers in that class, with the opt-out customer being required to pay the \$150 initial set-up fee.

Time-of-Use Information

Some DEC customers who voluntarily switched to time-of-use (TOU) rates have expressed concerns about a lack of sufficient information provided by DEC's smart meters. They state that DEC's AMR meters provided them with real-time data on their meter or thermostat that enabled them to determine whether they were using electricity during a peak or off-peak period, and to see their current month's peak demand. They state that this information enabled them to delay or shift their usage to times of off-peak rates. However, these TOU customers state that DEC's smart meters do not provide them this same real-time and peak demand information. Instead, they are required to go to DEC's online Customer Web Portal (CWP). In response to a question regarding data available to TOU customers, Commission Question No. 6 posed in the Scheduling Order, DEC stated, in pertinent part:

[F]or DEC customers that have received an AMI meter, the secure Duke Energy Customer Web Portal website displays usage information up to and including prior day usage. Customers can view daily and average energy usage by billing cycle. Customers can also view average energy usage by day-of-week, and hourly energy usage by day or week. Usage data is available for the previous 13 months, or as of the AMI meter certification date. Time-of-Use and Demand customers are able to view the information above and can also see the hour when the peak usage or peak demand occurred during the current or selected billing cycle respectively. Customers also have the ability to download their hourly usage data from the Customer Portal in a .csv format.

DEC's response appears to confirm that DEC's smart meters do not provide the real-time usage data that TOU customers had access to from their AMR meters. In addition, as discussed earlier, the Public Staff recommends that the Commission require DEC to take steps to ensure that all smart meters display basic real-time information consistent with the terms of the customer's applicable rate schedule. For TOU schedules, the Public Staff states that this information should include the kWh, and kilowatts if applicable, of each time period (on- and off-peak, and shoulder peak periods), as well as the monthly metered demand.

The Commission is concerned that a lack of real-time information may prevent or hamper TOU customers from achieving the benefits of off-peak usage that they seek in voluntarily participating in DEC's TOU rate offering. Therefore, the Commission finds good cause to require DEC to file a report detailing the real-time electric usage information that was available at the meter and thermostat to TOU customers using AMR meters compared to the real-time electric usage information that is available at the meter and thermostat to TOU customers using a smart meter. Further, DEC's report should address whether the smart meter information includes the kWh, and kilowatts if applicable, of each time period (on- and off-peak, and shoulder peak periods), as well as the monthly metered demand.

Conclusions

Based on the foregoing and the record, the Commission is not persuaded that DEC's proposed Rider MRM should be approved while DEC is continuing to evaluate whether and when to fully deploy smart meters. The Commission, therefore, concludes that it will hold its decision on DEC's proposed Rider MRM in abeyance until DEC informs the Commission, as required by the SGTP Order, that DEC intends to move forward with the deployment of smart meters. In the meantime, the Commission requests that DEC and the Public Staff provide the Commission with additional information on the three opt-out alternatives discussed above, including information demonstrating the rate impact on customers for each of the three alternatives, and verified responses to the Commission questions attached hereto as Attachment A.

With respect to NCSEA's request that the Commission consider adopting rules addressing access to the customer data that is produced by smart meters, the Commission agrees with DEC that access to customer data is a separate subject from smart meter opt-out. Further, the Commission notes that in its March 29, 2017 SGTP Order in Docket No. E-100, Sub 147, the Commission discussed the meetings on this subject that occurred in 2016 involving NCSEA, the Public Staff, the electric utilities and other interested parties. In the SGTP Order, the Commission requested that DEC include in its 2017 SGTP a report regarding developments in these discussions.

Finally, with regard to the Public Staff's concern that several of the Commission's rules on metering and billing do not reflect current meter engineering and technology, the Commission will take under advisement the recommendation that the Commission open a generic proceeding in which the rules can be reviewed and revised to accommodate the changing nature of electric service.

IT IS, THEREFORE, ORDERED as follows:

1. That a decision on the approval of Rider MRM as proposed by Duke Energy Carolinas, LLC, shall be, and is hereby, held in abeyance until DEC informs the Commission, as required by the SGTP Order, that DEC intends to move forward with the deployment of smart meters.

2. That DEC shall work with the Public Staff to design three alternatives to Rider MRM: (1) a sub-set of DEC's current Equal Payment Plan that requires opt-out

customers to read their meters semi-annually and report the readings to DEC for use in setting and adjusting their monthly payments and the twelfth-month true-up payment, (2) guidelines that allow opt-out customers to pay the incremental cost of installing a smart meter at a location on their property that is a suitable distance from their home or business, and (3) allocating the incremental cost of meter reading and billing opt-out customers to all customers served in the customer class. In addition, DEC shall provide information demonstrating the rate impact on customers for each of these three alternatives.

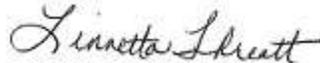
3. That on or before July 1, 2017, DEC shall file in this docket verified responses to the attached Commission questions, a report on the results of its work on designing the three alternatives, and a statement informing the Commission whether DEC finds any of the alternatives feasible and is willing to offer any of the alternatives to customers who request that they not be served by a smart meter.

4. That within thirty days after the date of this Order DEC shall file a report, as more fully described in the body of this Order, detailing the real-time electric usage information that was available at the meter and thermostat to TOU customers using AMR meters compared to the real-time electric usage information that is available at the meter and thermostat to TOU customers using a smart meter.

ISSUED BY ORDER OF THE COMMISSION.

This the 28th day of April, 2017.

NORTH CAROLINA UTILITIES COMMISSION



Linnetta Threatt, Acting Deputy Clerk

Commission Questions

1. Do the residential smart meters being installed by DEC include a screen or other reading device inside the customer's home that allows customers to see their usage information?
2. Please explain why the smart meters that have been installed for residential Time of Use (TOU) customers do not provide those customers with real time usage information; and why the real time usage information is not available to the customer directly on or from the meter, without having to go to DEC's internet portal.
3. Is DEC installing smart meters on new residential construction, such as new houses and condominiums?
4. If so, are the purchasers of such new houses and condominiums given the option by DEC to not have a smart meter installed?
5. On page 3 of DEC's Reply Comments, DEC addresses the situation in which a new customer moves into a premises previously occupied by an opt-out customer. In summary, DEC states that if the new customer also wants to opt out of a smart meter, the new customer will be required to pay the initial \$150 manually-read meter set-up charge because DEC's automated work order system will remove the manually-read meter and replace it with a smart meter, which will then have to be removed and replaced with a manually-read meter. In that situation, would it be more efficient and cost-effective to consult with the new customer before automatically installing a smart meter?
6. In DEC's response to Commission Question No. 9 in the Scheduling Order, DEC states "Finally, the Company has attempted to offer self-reading options in the past that were unsuccessful. Customers would forget to submit readings, which would generate estimated bills and field work orders to read the meters. Additionally, customers would 'adjust' the readings to time their payments, so actual billing for usage was nearly impossible." Please provide the details of all self-read options offered by DEC in the past, including the following information:
 - (a) Were DEC's self-read options offered to customers in North Carolina?
 - (b) How many customers were involved in the self-read options?
 - (c) Were the customers who participated in self-read options customers who were on DEC's Equal Payment Plan?

7. DEC stated in its 2016 SGTP that it has issued a Request for Proposals soliciting bids to initiate a pilot project for the Smart Meter Usage App (SMUA), a program that will allow customers to access their usage data on their telephone or computer.

(a) Please discuss DEC's view of the benefits to be derived from smart meters by customers self-reading their usage information from the smart meter or an app, and using the information to shift their usage to off-peak times, or generally to be more energy efficient.

(b) Will DEC's customers be required to pay a fee for the SMUA?

8. Please discuss DEC's selection of AMI meters in terms of features, and explain why DEC has not chosen or is unable to choose an AMI meter that can provide customers with real time or near real time usage information.
9. In 2009, in Docket No. E-7, Sub 906, the Commission approved DEC's Residential Energy Management Systems Pilot (REM) for testing with 200 customers in the Charlotte area. The REM provided customers with peak and non-peak energy usage information via a web portal. In January 2011, DEC filed a report on the REM results at that point. The report stated, "Over 50% of the customers felt the internet portal for managing their equipment and viewing data was easy to use; however, they did not visit it frequently: 71% of the customers visited the portal less than once a week."

Given that the REM pilot program showed that residential customers perhaps were less likely to visit the internet for usage information as frequently as desirable or as frequently as they checked usage when it could be seen at the meter, please explain why DEC favors its selected AMI meter(s).

10. Please explain why DEC has not chosen or is unable to use an AMI meter that can provide customers with information at the meter in addition to through an internet based app or portal.
11. If DEC institutes a systemwide deployment of AMI meters, does DEC plan to obtain its meters from a single vendor, or does DEC expect to be able to take advantage of the benefits of using competing AMI products?
12. In DEC's response to Commission Question No. 9 in the Scheduling Order, DEC states that "In summary, DEC would have to create an entirely new EPP to attempt to address the issues outlined above, which would easily surpass the proposed tariff costs in IT work for the Customer Billing System alone." On February 8, 2017, in Docket No. E-2, Sub 1137, Duke Energy Progress, LLC (DEP) filed an application for approval of a new voluntary residential program called Equal Payment Plan WeatherProtect (WeatherProtect). In summary, DEP states that

WeatherProtect will be an EPP without a true-up, thus providing customers with certainty as to the amount that they will pay over a 12-month period. Is it fair to say that DEP's WeatherProtect would be an entirely new EPP to attempt to address what some customers view as a risk of uncertainty in their electric costs?

13. In DEC's response to Commission Question No. 9 in the Scheduling Order, DEC states that "In addition, new rates for customers such as EE and Fuel are effective at different times of the year; without actual usage readings, it would also be impossible to bill the customer the appropriate amount." On the annual change date(s) of DEC's DSM/EE, REPS and Fuel riders, does DEC recalculate each EPP customer's monthly payment to reflect the changes in DSM/EE, REPS and Fuel rates?
14. The following statement is included in a March 2011 white paper by Edison Electric Institute entitled "A Discussion of Smart Meters and RF Exposure Issues," at p. 7: "The Smart Meters collect data locally and transmit via a Local Area Network (LAN) to a data collector. This transmission can occur as often as 15 minutes or as infrequently as daily according to the use of the data." Please discuss whether it would be feasible to program the smart meters of persons having concerns about RFs such that data collection from their smart meters occurs while they are absent from their home, such as Monday-Friday during work hours.
15. Please discuss the steps that DEC has taken to inform DEC's customers on the subjects of concerns about privacy of their data and health effects of RFs from smart meters. In addition, please discuss future steps that DEC intends to take to address these concerns in an effort to reduce the number of its customers who feel the need to opt out of using smart meters.