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**BEFORE THE NORTH CAROLINA UTILITIES COMMISSION**

**DOCKET NO. E-7, SUB 1146**

In the Matter of	)	
Application of Duke Energy Carolina, for	)	TESTIMONY OF
Adjustment of Rates and Charges	)	JOHN R. HINTON
Applicable to Electric Utility Service in	)	PUBLIC STAFF – NORTH
North Carolina	)	CAROLINA UTILITIES
	)	COMMISSION

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1146

TESTIMONY OF JOHN R. HINTON  
ON BEHALF OF THE PUBLIC STAFF  
NORTH CAROLINA UTILITIES COMMISSION

JANUARY 23, 2018

1 Q. PLEASE STATE YOUR NAME, POSITION AND BUSINESS  
2 ADDRESS FOR THE RECORD.

3 A. My name is John R. Hinton. I am Director of the Economic Research  
4 Division of the Public Staff of the North Carolina Utilities Commission.  
5 My business address is 430 North Salisbury Street, Raleigh, North  
6 Carolina 27603. My qualifications and experience are provided in  
7 Appendix A.

8 Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS  
9 PROCEEDING?

10 A. The purpose of my testimony is to present the results of my  
11 investigation of the funding status of the Nuclear Decommissioning  
12 Trust Fund (NDTF) for Duke Energy Carolinas, LLC (DEC or  
13 Company) and the analysis used by the Company to weather  
14 normalize its energy sales.

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1   **Q.    WHAT IS THE NDTF?**

2    A.    The Nuclear Regulatory Commission (NRC) requires the  
3           decommissioning of a nuclear unit after it ceases power operations.  
4           Federal law defines “decommissioning” as the safe removal of a  
5           facility from service and reduction of residual radioactivity to a level  
6           that permits termination of the NRC license. The NRC requires  
7           funding of NDTFs or other financial assurance for nuclear facilities to  
8           cover the cost of decommissioning.<sup>1</sup> NDTFs are funded by  
9           ratepayers and segregated into qualified and non-qualified trust  
10          funds set aside by utilities exclusively for nuclear decommissioning.

11          The Commission has adopted Guidelines for Determination and  
12          Reporting of Nuclear Decommissioning Costs (Guidelines) in Docket  
13          No. E-100, Sub 56. The Guidelines require utilities to perform and  
14          issue site-specific nuclear decommissioning cost studies at least  
15          once every five years and provide for the filing of a funding report  
16          related to the cost studies. The purpose of the studies and reports  
17          is to ensure that the NDTFs of the utilities are being efficiently funded  
18          at a sufficient level to decommission the nuclear units of the utilities..  
19          DEC filed its most recent Decommissioning Cost and Funding Report  
20          (DCF Report) regarding its nuclear decommissioning cost study on

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<sup>1</sup> <https://www.nrc.gov/waste/decommissioning/faq.html>.

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1           October 10, 2014.

2   **Q.   PLEASE DESCRIBE THE FUNDING MODEL THAT ENSURES**  
3       **SUFFICIENT FUNDS ARE AVAILABLE TO DECOMMISSION THE**  
4       **NUCLEAR UNITS.**

5   A.   The funding model targets a site specific estimate of the future costs  
6       to decommission the plant site. The key inputs in the model are the  
7       current balance of the funds collected, the projected annual earnings  
8       rates on the funds, and the escalation rates that yield the future cost  
9       of decommissioning. Other assumptions that tend to have less of an  
10      impact of the funding model include whether one includes a reduction  
11      in the rate of return during the decommissioning period to provide  
12      enhanced certainty of cash flows and the level of portfolio turnover  
13      within the fund. These inputs to the model are discussed on page 9  
14      of the testimony of Duke Energy Progress, LLC witness Doss in  
15      Docket No. E-2, Sub 1142. Once the future expense levels are  
16      ascertained, DEC incorporates an investment strategy that is  
17      designed to generate sufficient earnings to meet this expected future  
18      expense. The amount of funding required over the approximate 25  
19      years of decommissioning is levelized with an annuity calculation.

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1   **Q.    WHAT LEVEL OF NUCLEAR DECOMMISSIONING EXPENSE DID**  
2       **THE COMPANY INCLUDE IN ITS APPLICATION IN THIS CASE?**

3   A.   The Company is not seeking to recover any decommissioning  
4       expenses in this case because the current models indicate that the  
5       NTDF is fully funded.

6   **Q.    PLEASE EXPLAIN WHY DEC IS NOT REQUESTING AN**  
7       **INCREASE IN ITS RATES TO PROVIDE ADDITIONAL FUNDS**  
8       **FOR ITS NDTF.**

9   A.   On December 23, 2014, DEC filed a notice in Docket No. E-100,  
10       Sub 56 that the Company thought it was reasonable to eliminate the  
11       \$14.6 million<sup>2</sup> amount of nuclear decommissioning expense included  
12       in its current rates effective January 1, 2015, which is shown in  
13       Exhibit JRH-1. The filing noted that the NDTF had experienced  
14       investment rates of return significantly higher than what was  
15       expected over the long term. The Company further noted that  
16       depending on changes in future costs of decommissioning and  
17       returns, the funding reports could show very different results.

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<sup>2</sup> The originally proposed decommissioning expense in the Company's last rate case in Docket No. E-7, Sub 1026 was approximately \$34.6 million and ultimately was set at \$14.6 million.

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1    **Q.     PLEASE DESCRIBE THE NDTF ANNUAL RATES OF RETURNS**  
2           **THAT DEC REFLECTED IN ITS PROPOSAL TO ELIMINATE**  
3           **FUNDING OF ITS NDTF.**

4    A.    It appears that DEC was referring to the above average returns<sup>3</sup> of  
5           **[BEGIN CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL]**  
6           for its qualified funds and non-qualified funds, respectively, over the  
7           then most recent five-year period (2009-2013). Another possible  
8           factor was the average earned returns for its qualified funds and non-  
9           qualified funds over the prior ten years (2004-2013) of **[BEGIN**  
10          **CONFIDENTIAL] [REDACTED] [END CONFIDENTIAL],**  
11          respectively. DEC's annual earned returns as of June 30, 2017 and  
12          for the past 25 years for its qualified and non-qualified funds are  
13          shown in Confidential Exhibit JRH-2. These earned returns are  
14          significantly greater than what was expected in the funding model  
15          that led to the Company's request to eliminate the amount of nuclear  
16          decommissioning expense.

17   **Q.     WHAT ASSUMPTIONS DID DEC INCORPORATE REGARDING**  
18           **THE PROJECTED RATE OF RETURN ON THE TRUST FUND**  
19           **EARNINGS AND THE ESCALATION RATE OR INFLATION RATE**  
20           **IN THIS RATE CASE?**

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<sup>3</sup> The returns are net of taxes and fees.

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1     A.     DEC utilized a projected after-tax rate of return on the qualified fund  
2           of 4.3% and the escalation rate of 2.4%. DEC utilized an after-tax  
3           projected rate of return on its non-qualified funds of 3.8%. In addition,  
4           the funds are de-risked as the fund approaches the final five years  
5           of the decommissioning period, which lowers the projected qualified  
6           after-tax returns to 1.8% and 1.4% for the qualified and non-qualified  
7           funds, respectively. The results of the funding model show that even  
8           when utilizing these lower than historically experienced rates of  
9           return, DEC's NDTF is overfunded.

10    **Q.     ARE THERE OTHER DIFFERENCES BETWEEN DEC'S FUNDING**  
11           **MODEL IN THIS CASE AND THE FUNDING MODEL IN DEC'S**  
12           **LAST RATE CASE IN DOCKET NO. E-7, SUB 1026?**

13    A.     Yes. In the prior funding model, the Company adjusted the funding  
14           model to allow for earnings on the unspent funds until the time the  
15           unit is scheduled to shut down. In the current funding model, the  
16           Company has adjusted the model to allow for earnings on the  
17           unspent funds throughout the decommissioning period.

18    **Q.     BASED ON PROJECTED ANNUAL RATES OF RETURN ON THE**  
19           **NDTF AND THE ESCALATION RATES, HOW MUCH IS THE NDTF**  
20           **OVER-FUNDED?**

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1     A.     Assuming the projected decommissioning costs and earning returns  
2           on the qualified and non-qualified funds are accurate through when  
3           DEC's last nuclear unit is decommissioned, the NDTF is currently  
4           over-funded by \$2.35 billion.

5     **Q.     WHAT IS YOUR RECOMMENDATION REGARDING THE EXCESS**  
6           **FUNDS?**

7     A.     I recommend that the excess funds be returned to ratepayers.  
8           According to the Company, this can be accomplished by reducing  
9           NC retail expenses by approximately \$19.4 million per year, which  
10          would effectively remove the excess. However, based on information  
11          provided by the Company in response to a data request, restrictions  
12          by the Internal Revenue Service (IRS) and NRC prohibit withdrawals  
13          from the NDTF for purposes other than nuclear decommissioning.  
14          Public Staff witness Maness will address possible regulatory  
15          accounting methods to accomplish this credit to customers without  
16          violating IRS or NRC restrictions.

17    **Q.     ARE YOU CONCERNED THAT RETURNING THE EXCESS**  
18          **FUNDS TO RATEPAYERS COULD LEAD TO THE**  
19          **UNDERFUNDING OF THE NDTF IN THE FUTURE?**

20    A.     No. I believe that there are sufficient regulatory protections to avoid  
21          any significant under recovery in the NDTF. The NDTF is reviewed



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1 every five years by the Commission in Docket No. E-100, Sub 56,  
2 and if it became apparent that the NDTF is underfunded, the  
3 Commission can take appropriate action. In the Stipulation approved  
4 by the Commission in the Company's last rate case (Docket No. E-  
5 7, Sub 1026), the parties agreed not to oppose the future deferral of  
6 decommissioning expenses. Additionally, historically the earning  
7 rates of return for DEC's NDTF are greater than the 5.3% for the  
8 qualified fund and 3.8% for the non-qualified fund assumed by DEC.  
9 As shown in Confidential Exhibit JRH-2, the average return from  
10 1993 through the 12 months ending June 30, 2017 is **[BEGIN**  
11 **CONFIDENTIAL]** [REDACTED] **[END CONFIDENTIAL]** for the  
12 qualified fund and the non-qualified fund, respectively. The fact that  
13 the earned rates of return on the funds tends to be significantly above  
14 the projected returns provides for a significant degree of  
15 conservatism that should lead to a continuation of the over funding  
16 in the future.

17 **WEATHER NORMALIZATION**

18 **Q. PLEASE EXPLAIN THE TYPICAL REGRESSION ANALYSIS**  
19 **USED TO WEATHER NORMALIZE CUSTOMER USAGE FOR THE**  
20 **RESIDENTIAL CLASS?**

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1 A. Traditionally the analysis is performed by regressing the monthly  
2 residential usage per customer with weather variables, such as  
3 heating degree days, cooling degree days, and humidity. The data  
4 series in the analysis is usually for 60 months. If the regression  
5 equation includes any variables relating to personal income and  
6 electricity prices, then the data series generally spans significantly  
7 more years. Often, the regression equation incorporated for weather  
8 normalization is the same equation used to forecast the residential  
9 sales per customer reflected in Integrated Resource Plans.

10 **Q. DO YOU HAVE ANY CONCERNS WITH DEC'S PROPOSED**  
11 **REGRESSION ANALYSIS FOR RESIDENTIAL CUSTOMERS IN**  
12 **THIS CASE?**

13 A. Yes. The Company used total residential class sales as the  
14 dependent variable in the regression analysis. This is a departure  
15 from past practice of using electricity usage per customer and, in my  
16 opinion, is questionable given that changes in the residential class  
17 sales, as modeled by DEC, does not explicitly model changes in  
18 usage related to the number of residential customers. The use of  
19 class sales for the commercial and industrial classes is reasonable  
20 because their responsiveness to changes in the weather is not as  
21 significant and highly correlated as the residential class. In addition,  
22 the Company's current IRP forecast of residential energy sales is not

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1           derived by regressing total sales; rather, the total residential sales  
2           forecast is derived by regressing residential sales per customer with  
3           several explanatory variables that relate to appliance efficiency,  
4           income, and weather.

5   **Q.   WHAT IS THE IMPACT OF REGRESSING SALES PER**  
6       **CUSTOMER UTILIZING THE METHOD THAT HAS BEEN**  
7       **PREVIOUSLY EMPLOYED BY DEC?**

8   A.   My recommended use of residential usage per customer in the  
9       regression equation leads to a smaller decrease in energy sales  
10      adjusted for weather of 411,944,798 kWh, as compared to, the larger  
11      decrease of 484,669,763 kWh calculated by DEC. This is shown in  
12      Public Staff witness Boswell Exhibit 1, Schedule 3-1(b)(1).

13   **Q.   DOES THIS CONCLUDE YOUR TESTIMONY?**

14   A.   Yes.

John R. Hinton

I received a Bachelor of Science degree in Economics from the University of North Carolina at Wilmington in 1980 and a Master of Economics degree from North Carolina State University in 1983. Since joining the Public Staff in May of 1985, I have filed testimony on the long-range electrical forecast in Docket No. E-100, Sub 50. In 1986, 1989 and 1992, I developed the long range forecasts of peak demand for electricity in North Carolina. I filed testimony on electricity weather normalization in Docket No. E-7, Sub 620, and Docket No. E-2, Sub 833.. I filed testimony on electricity weather normalization and customer growth in Docket No. E-7, Sub 989. I filed testimony on the appropriate funding for nuclear decommissioning and customer growth in Docket No. E-2, Sub 1023. I have filed testimony on the Integrated Resource Plans (IRPs) in Docket No. E-100, Sub 114 and Docket No. E-100, Sub 125. I have reviewed numerous peak demand and energy sales forecasts and the expansion plans filed in electric utilities' annual IRPs. I have filed testimony on the hedging cost of natural gas in electric utility fuel adjustment cases in Docket No. E-2, Sub 1001, Docket No. E-2, Sub 1018

I have been the lead analyst for the Public Staff in numerous avoided cost proceedings. I have filed testimony on the avoided cost of electricity in Docket No. E-100, Sub 106, and I have filed a Statement of Position in the arbitration case involving EPCOR and Progress Energy Carolinas in Docket No. E-2, Sub 966.

I have filed testimony on the issuance of certificates of public convenience and necessity in Docket No. E-2, Sub 669; Docket No. SP-132, Sub 0; Docket No. E-7, Sub 790; and Docket No. E-7, Sub 791.

I have filed testimony on the cost of capital in Docket No. E-22, Sub 333; Docket No. E-34, Sub 46, Docket No. E-22, Sub 412; Docket No. P-100, Sub 133b; Docket No. P-100, Sub 133d (1997 and 2002); Docket No. P-26, Sub 93; Docket No. P-12, Sub 89; Docket No. P-31, Sub 125; Docket No. G-21, Sub 293; Docket No. G-5, Sub 327; Docket No. G-5, Sub 386; Docket No. G-9, Sub 351; Docket No. G-21, Sub 442; Docket No. W-778, Sub 31; and Docket No. W-218, Sub 319. I have filed affidavits on the cost of capital in several smaller water utility rate cases.

I have filed testimony on the expansion of natural gas in Docket No. G-5, Sub 337, and Docket No. G-5, Sub 372. I performed the financial analysis in the two audit reports on Mid South Water Systems, Inc., which were filed in Docket No. W-100, Sub 21. I have filed testimony on weather normalization of water sales in Docket No. W-274, Sub 160.

With regard to the 1996 Safe Drinking Water Act, I was a member of the Small Systems Working Group that reported to the National Drinking Water Advisory Council of the U.S. Environmental Protection Agency (EPA). I have published an article in the National Regulatory Research Institute's (NRRI's) Quarterly Bulletin entitled Evaluating Water Utility Financial Capacity.



Heather Shirley Smith  
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December 23, 2014

**VIA ELECTRONIC FILING**

Gail L. Mount  
Chief Clerk  
North Carolina Utilities Commission  
4325 Mail Service Center  
Raleigh, North Carolina 27699-4325

Re: Docket No. E-100, Sub 56; Nuclear Decommissioning Cost and Funding  
Report and Request for an Accounting Order

Dear Ms. Mount:

Pursuant to the North Carolina Utilities Commission's ("the Commission") November 3, 1998 *Order Approving Guidelines* in the above-referenced docket, Duke Energy Carolinas, LLC ("DEC" or the "Company") filed its Decommissioning Cost Study Reports on April 9, 2014. In connection with that filing, DEC filed its Decommissioning Cost and Funding Report ("the Report") on October 10, 2014.

In the Commission's *Order Granting General Rate Increase* issued on September 24, 2013, in Docket E-7, Sub 1026, the Commission approved a stipulated reduction to annual nuclear decommissioning expense from approximately \$35 million to approximately \$14.6 million on a North Carolina retail basis. The Report filed on October 10, 2014, indicates that based on reasonable assumptions including but not limited to, decommissioning costs, inflation rates, taxes, and interest rates, the Company is now projecting that the current decommissioning trust funds balances are sufficient to fully fund decommissioning the Company's nuclear units when such time comes.

Recently, the Nuclear Decommissioning Trust has experienced investment returns significantly higher than what is expected over the long-term. While the assumptions used in this report are based on the Company's current estimate of future investment returns and cost estimates, actual results may vary significantly. Depending on returns and changes in cost escalation rates, future funding reports could show very different results.

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Jan 23 2018

However, based on the Report, the Company thinks it is reasonable to propose eliminating the amount of nuclear decommissioning expense included in current rates. The Company proposes to decrease rates at the conclusion of this proceeding under the guidelines established in this Docket—180 days—and plans to time such decrease corresponding with the rate changes planned for July 1, 2015 as ordered in Docket Nos. E-7, Sub 1058 and M-100, Sub 138 to reflect rate changes required by North Carolina Public Utilities House Bill 998. The Company respectfully requests that the Commission approve deferring the corresponding revenue amount included in current rates for nuclear decommissioning costs using a regulatory liability account until such time as it will be refunded. On an annual basis, the Company anticipates that the rate change will equate to approximately 26 cents per month for an average residential customer. Accordingly, the Company respectfully requests the Commission issue an Accounting Order effective January 1, 2015, authorizing such deferral until the time of the planned rate change. During that time, the Company intends that the regulatory liability account accrue the net-of-tax overall rate of return as set in the Company's most recent rate case.

The Company also would like to express its willingness to extend the Public Staff's discovery period, as the Company has requested an extension on its response time for certain requests sought by the Public Staff. Any changes that may be necessitated by such extension will be reported to the Commission as soon as possible.

Please let me know, at your earliest convenience, if you have any questions regarding this matter.

Sincerely,

  
Heather Shirley Smith

Enclosures

Copy: Parties on Record



## CERTIFICATE OF SERVICE

Docket No. E-100, Sub 56

I certify that a copy of Duke Energy Carolinas, LLC's Nuclear Decommissioning Cost and Funding Report and Request for Accounting Order has been served by electronic mail (email), hand delivery, or by depositing a copy in the United States Mail, first class postage prepaid, properly addressed to the parties of record.

This the 23<sup>rd</sup> day of December, 2014.

A handwritten signature in blue ink that reads "Heather Shirley Smith". The signature is written in a cursive style and is positioned above a horizontal line.

Heather Shirley Smith  
Duke Energy Carolinas, LLC  
550 South Tryon Street  
DEC45A/ P.O. Box 1321  
Charlotte, North Carolina 28201-1006  
980.373.3725

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	Year	DEC Qualified Annual Returns	DEC Non- Qualified Annual Returns
1	1993		
2	1994		
3	1995		
4	1996		
5	1997		
6	1998		
7	1999		
8	2000		
9	2001		
10	2002		
11	2003		
12	2004		
13	2005		
14	2006		
15	2007		
16	2008		
17	2009		
18	2010		
19	2011		
20	2012		
21	2013		
22	2014		
23	2015		
24	2016		
25	2017 <sup>1</sup>		
1993-2017 Average			
2009-2013 Average			
2004-2013 Average			

Note:

<sup>1</sup> 12 months as of June 30, 2017.