



**NORTH CAROLINA  
PUBLIC STAFF  
UTILITIES COMMISSION**

September 23, 2021

Ms. A. Shonta Dunston, Chief Clerk  
North Carolina Utilities Commission  
4325 Mail Service Center  
Raleigh, North Carolina 27699-4300

Re: Docket No. G-5, Sub 632 – Application of Public Service Company of North Carolina, Inc., for a General Increase in Rates and Charges; and G-5, Sub 634 - Application for Approval to Modify Existing Conservation Programs and Implement New Conservation Programs

Dear Ms. Dunston:

Attached for filing in the above-referenced docket is the joint testimony of James M. Singer, Utilities Engineer, Natural Gas Section, Energy Division, and David M. Williamson, Utilities Engineer, Electric Section, Energy Division.

By copy of this letter, I am forwarding a copy to all parties of record by electronic delivery.

Sincerely,

Electronically submitted  
s/ Gina C. Holt  
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s/ John Little  
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Attachment

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**BEFORE THE NORTH CAROLINA UTILITIES COMMISSION**

**DOCKET NO. G-5, SUB 632**

**DOCKET NO. G-5, SUB 634**

**JOINT TESTIMONY OF**

**JAMES M. SINGER AND DAVID M. WILLIAMSON**

**ON BEHALF OF THE PUBLIC STAFF  
NORTH CAROLINA UTILITIES COMMISSION**

**SEPTEMBER 23, 2021**

1 **Q. MR. SINGER, PLEASE STATE YOUR NAME, BUSINESS**  
2 **ADDRESS, AND PRESENT POSITION.**

3 A. My name is James M. Singer and my business address is 430 North  
4 Salisbury Street, Dobbs Building, Raleigh, North Carolina. I am a  
5 Utilities Engineer with the Energy Division of the Public Staff - North  
6 Carolina Utilities Commission.

7 **Q. WOULD YOU BRIEFLY DISCUSS YOUR EDUCATION AND**  
8 **EXPERIENCE?**

9 A. Yes. My education and experience are attached as Appendix A to  
10 this testimony.

11 **Q. MR. WILLIAMSON, PLEASE STATE YOUR NAME, BUSINESS**  
12 **ADDRESS, AND PRESENT POSITION.**

13 A. My name is David M. Williamson and my business address is 430  
14 North Salisbury Street, Dobbs Building, Raleigh, North Carolina. I am  
15 a Utilities Engineer with the Energy Division of the Public Staff - North  
16 Carolina Utilities Commission.

1 Q. WOULD YOU BRIEFLY DISCUSS YOUR EDUCATION AND  
2 EXPERIENCE?

3 A. Yes. My education and experience are attached as Appendix B to  
4 this testimony.

5 Q. WHAT IS THE PURPOSE OF YOUR JOINT TESTIMONY?

6 A. The purpose of our testimony is to present to the Commission the  
7 Public Staff's recommendations regarding Public Service Company  
8 of North Carolina, Inc.'s (PSNC or the Company) proposed Energy  
9 Efficiency (EE) Portfolio. Our review includes an evaluation of the  
10 following topics:

- 11 • The Company's historical operation of its EE portfolio;
- 12 • The Company's proposed new and modified programs, and  
13 continuation of its Conservation Education Program without  
14 modification;
- 15 • The Company's cost effectiveness calculations including the  
16 inputs; and
- 17 • The Company's evaluation, measurement, and verification  
18 (EM&V) of its programs.

1    **Q.    WHAT GENERAL STATUTES, COMMISSION RULES, AND**  
2           **COMMISSION ORDERS HAVE YOU APPLIED IN YOUR REVIEW**  
3           **OF THE COMPANY'S APPLICATION FOR APPROVAL OF ITS**  
4           **PORTFOLIO OF EE PROGRAMS?**

5    A.    Since there is not a statute or Commission rule that specifically  
6           addresses natural gas EE, the Public Staff has reviewed the  
7           Company's application in a similar manner to how it would review the  
8           programs of an investor-owned electric utility (electric IOU) EE  
9           program. Commission Rule R6-95 contains guidelines for programs  
10          designed to incent the use of natural gas (both EE and non-EE  
11          related). This Commission Rule, along with N.C. Gen. Stat. § 62-  
12          133.9 and Commission Rules R8-68 and 69 were used to help guide  
13          our investigation and to create a framework by which to evaluate the  
14          Company's proposal.

15          The Public Staff also reviewed previous Commission orders  
16          involving natural gas EE programs, including Docket No. G-5, Sub  
17          495A. Within the Sub 495A docket, we reviewed the Annual  
18          Conservation Program Reports for program years 2009 through  
19          2020.

20    **Q.    PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

21    A.    With respect to the Company's natural gas EE programs, the Public  
22          Staff recommends that the Commission:

- 1           1)     Approve the proposed modifications to its Energy Efficient  
2                     Equipment Rebate Program and High Efficiency Discount  
3                     Rate Program.
- 4           2)     Approve the proposed Residential New Construction  
5                     Program, Home Energy Report Program, and Residential  
6                     Low-Income Program.
- 7           3)     Reject the Company's request to remove the costs of the High  
8                     Efficiency Rate Discount program from base rates, and  
9                     require that the costs of the program remain in base rates.
- 10          4)     Approve the Company's proposal to remove the remaining  
11                    costs of all of its other EE programs from base rates and allow  
12                    PSNC to recover those costs through an annual rider.
- 13          5)     Require the Company to split the Energy Efficient Equipment  
14                    Rebate Program into separate Residential and Commercial  
15                    programs for cost allocation purposes.
- 16          6)     Approve the Company's portfolio of natural gas EE programs,  
17                    including the currently existing Conservation Education  
18                    Program, as pilot programs to collect operational data,  
19                    perform EM&V, and assess cost-effectiveness.
- 20          7)     Require the Company to conduct more rigorous EM&V during  
21                    the pilot period, including both process and impact  
22                    evaluations, and to determine and include appropriate Net-to-

1 Gross (NTG) assumptions for each program and inputs  
2 associated with avoided cost.

3 8) Approve these pilot programs for a period of three years, to  
4 commence within six months of the Commission's final order  
5 in this docket. At the end of the pilot period or sooner, if  
6 program performance dictates, the Company should for each  
7 program seek either approval as a full program (with  
8 appropriate modifications) or termination. Any petition for full  
9 approval or termination should include supporting testimony  
10 on the updated inputs for participation, savings, NTG ratio,  
11 avoided costs, program costs, and cost-effectiveness test  
12 results.

13 **The Company's Historical Natural Gas EE Programs**

14 **Q. HAS THE COMPANY OFFERED NATURAL GAS EE PROGRAMS**  
15 **IN THE PAST?**

16 A. Yes. The Company has previously offered to customers the  
17 Conservation Education Program, Energy Efficient Equipment  
18 Rebate Program<sup>1</sup>, High Efficiency Discount Rate Program<sup>2</sup>, and In-

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<sup>1</sup> In its 2021 Sub 495A report, PSNC calls this program the Energy Efficient Equipment Rebate Program, while PSNC witness Herndon's Exhibit 2 calls the program the Energy Efficiency Rebate Program, and the proposed Rider F attached to PSNC witness Hinson's testimony refers to the program as the Energy Efficiency Equipment Rebate Program. The Public Staff will refer to the program as the Energy Efficient Equipment Rebate Program in this testimony.

<sup>2</sup> In its 2021 Sub 495A report, PSNC calls this program the High Efficiency Discount Rate Program, as does the proposed Rider F attached to PSNC witness Hinson's testimony. PSNC witness Herndon's Exhibit 2 calls the program the High Efficiency

1 Home Energy Audit Program. The Commission originally approved  
2 these programs in Docket No. G-5, Sub 495A, on March 20, 2009.<sup>3</sup>  
3 The Commission granted the Company's petition to discontinue the  
4 In-Home Energy Audit Program on February 9, 2016 due to poor  
5 cost-effectiveness results and declining participation.<sup>4</sup>

6 **Q. PLEASE DESCRIBE THE COMPANY'S CURRENT PORTFOLIO**  
7 **OF PROGRAMS.**

8 A. The Conservation Education Program provides conservation  
9 education to elementary school classes in PSNC's service territory  
10 through a third party provider, the National Theatre for Children.

11 The Energy Efficient Equipment Rebate Program provides rebates  
12 to PSNC's North Carolina residential and commercial customers who  
13 purchase and install qualifying high efficiency natural gas heating  
14 and water heating equipment to replace existing natural gas  
15 equipment.

16 The High Efficiency Discount Rate Program encourages construction  
17 of homes and commercial buildings that are substantially more

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Discount Program. The Public Staff will refer to the program as the High Efficiency Discount Rate Program in this testimony.

<sup>3</sup> *In the Matter of Application of Public Service Company of North Carolina, Inc., for Approval of Conservation Programs*, Order Approving Conservation Programs, Docket No. G-5 Sub 495A, (N.C.U.C. March 20, 2009) (Approval Order).

<sup>4</sup> *In the Matter of Application of Public Service Company of North Carolina, Inc., for Approval of Conservation Programs*, Order Approving Conservation Program Modifications, Docket No. G-5 Sub 495A, (N.C.U.C. February 9, 2016) (Modification Order).



1 energy efficient than those built to building code standards, and in  
2 return, offers natural gas at a discounted rate to customers  
3 occupying those buildings.

4 **Q. HOW HAS THE COMPANY RECOVERED THE COSTS FOR**  
5 **THESE PROGRAMS?**

6 A. Since the programs' inception, the Company recovered its costs from  
7 customers through the Company's base rates. PSNC incurred  
8 \$795,369 in 2020 for program development, marketing, rebates, and  
9 EM&V for these programs.

10 **Q. HAS THE COMPANY FILED ANY REPORTS ON THESE**  
11 **PROGRAMS?**

12 A. Yes. The Company files an annual report on the programs that  
13 covers a number of topics for each program such as the  
14 administration budget, total number of measures/rebates installed,  
15 satisfaction surveys, estimated annual therm reductions, and cost-  
16 effectiveness results.<sup>5</sup>

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<sup>5</sup> The most recent PSNC annual report was filed in Docket No. G-5, Sub 495A, on March 31, 2021 (2021 Annual Report).

1           **The Company's Proposal for Natural Gas EE Programs**

2   **Q.   WHAT CHANGES DOES THE COMPANY PROPOSE IN DOCKET**  
3           **NO. G-5, SUB 632 FOR ITS PORTFOLIO OF EE PROGRAMS?**

4   A.   The Company has not proposed any changes to its Conservation  
5           Education program. The Company is proposing to expand the  
6           Energy Efficient Equipment Rebate Program and the High Efficiency  
7           Discount Rate Program and is also requesting approval for three new  
8           Natural Gas EE programs: Residential New Construction Program,  
9           Home Energy Report Program, and Residential Low Income  
10          Program.

11 **Q.   PLEASE DESCRIBE THE COMPANY'S PROPOSED**  
12 **MODIFICATIONS TO ITS EXISTING PROGRAMS.**

13 A.   The Company plans to expand the Energy Efficient Equipment  
14 Rebate Program to include additional measures, including smart  
15 thermostats and high efficiency natural gas commercial food service  
16 equipment. The Energy Efficient Equipment Rebate program  
17 includes both Residential and Non-Residential measures.

18           The Company proposes to modify its current High Efficiency  
19 Discount Rate Program to include homes that meet the North  
20 Carolina High Efficiency Residential Option (HERO) Code, as well  
21 as Energy Star certified homes and Leadership in Energy and

1 Environmental Design (LEED) commercial buildings to which it  
2 currently applies.

3 **Q. PLEASE DESCRIBE THE COMPANY'S PROPOSED NEW**  
4 **PROGRAM OFFERINGS.**

5 A. The Residential New Construction Program provides financial  
6 incentives to participating builders who construct more energy  
7 efficient homes through the installation of eligible measures. Builders  
8 can participate in one of two paths: 1) a whole home path that  
9 requires homes to meet or exceed the HERO standards; or 2) an  
10 individual equipment path with incentives offered based on the  
11 installation of qualifying natural gas equipment in the home.

12 The Home Energy Report Program will encourage behavioral  
13 changes by providing customized reports on how participants'  
14 energy use compares with other customer homes in the area. The  
15 reports will also provide tips on how to best manage energy use,  
16 save on monthly gas bills, and participate in other PSNC EE  
17 programs.

18 The Residential Low Income Program will offer in-home site visits  
19 that include an assessment of energy efficiency improvements, and  
20 then the direct installation of natural gas saving measures, including  
21 both low cost, easily installed measures such as high efficiency  
22 showerheads, faucet aerators, and hot water pipe insulation, as well

1 as higher-cost, more labor-intensive measures such as air sealing,  
2 duct sealing, and additional insulation.

3 **Cost Effectiveness**

4 **Q. PLEASE EXPLAIN HOW COST EFFECTIVENESS IS**  
5 **DETERMINED.**

6 A. The cost effectiveness of measures or programs is generally  
7 measured by comparing the ratio of the costs to the benefits using  
8 four different tests: the Utility Cost test (UC), Total Resource Cost  
9 test (TRC), Participant test, and Ratepayer Impact Measure (RIM)  
10 test. Each test focuses on a different perspective and may include  
11 different costs and benefits, and as a result, a program may have a  
12 cost effectiveness score above 1.0 on one or more tests (the benefits  
13 outweigh the costs), and below 1.0 on other tests (the costs outweigh  
14 the benefits). In its review of electric EE programs and measures, the  
15 Public Staff currently uses the UC test to screen for cost-  
16 effectiveness, but also considers the TRC test. The Public Staff has  
17 used this same approach in reviewing the natural gas EE programs.

18 The TRC test considers the net benefit or cost of an EE program as  
19 a resource option based on the total costs of the program, including  
20 both the participants' and the utility's costs, as well as the benefits of  
21 the program, typically measured using the utility's avoided costs.  
22 Likewise, the UC test measures benefits and costs, but on the cost

1 side only takes into account the costs incurred by the utility. A UC  
2 test result greater than 1.0 indicates that the program is cost  
3 beneficial to the utility (the overall system benefits are greater than  
4 the utility's costs, including incentives paid to participants), thus  
5 lowering the aggregate cost (and revenue requirement) of providing  
6 utility service. The Participant test evaluates the benefits and costs  
7 specific to those ratepayers who participate in a program, looking at  
8 the impact of participants' bills. The RIM test assesses how the  
9 program affects ratepayers who do not participate.

10 **Q. WHAT TEST DID THE COMPANY USE TO DETERMINE COST**  
11 **EFFECTIVENESS FOR ITS PORTFOLIO OF NATURAL GAS EE**  
12 **PROGRAMS?**

13 A. The Company utilized the UC test as the primary test for its  
14 determination of program cost effectiveness of its new EE portfolio.

15 **Q. HOW DID THE COMPANY ANALYZE THE COST**  
16 **EFFECTIVENESS OF ITS PROGRAMS?**

17 A. The Company contracted the services of Nexant, Inc. (Nexant) to  
18 perform the cost effectiveness modeling for the Company's portfolio  
19 of Natural Gas EE programs.

1 **Q. PLEASE DESCRIBE THE RESULTS OF THE COST**  
 2 **EFFECTIVENESS ANALYSIS AS CONTAINED IN THE**  
 3 **COMPANY'S APPLICATION.**

4 A. The Company's cost effectiveness results are:

Portfolio Cost-Benefit Results								
Program	Total Resource Cost		Participant Cost Test		Utility Cost Test		Ratepayer Impact Measure	
	NPV	B/C	NPV	B/C	NPV	B/C	NPV	B/C
EE Rebates	-\$509,688	1.0	\$10,583,036	2.3	\$3,814,144	1.6	-\$15,296,147	0.3
Conservation Education	-\$395,528	0.3	\$337,643	99.9	-\$395,528	0.3	-\$739,442	0.1
Home Energy Reports	\$6,424	1.0	\$1,829,442	99.9	\$6,424	1.0	-\$1,857,456	0.3
Residential New Construction	-\$1,135,784	0.8	\$6,073,825	2.4	\$51,723	1.0	-\$8,501,866	0.3
High Efficiency Discount	\$3,686,767	44.8	\$6,424,415	99.9	\$1,938,291	2.1	-\$4,742,992	0.3
Residential Low Income	-\$204,384	0.9	\$1,946,324	2.8	-\$204,384	0.9	-\$2,824,509	0.2
<b>Totals</b>	<b>\$1,447,808</b>	<b>1.1</b>	<b>\$27,194,683</b>	<b>3.0</b>	<b>\$5,210,671</b>	<b>1.3</b>	<b>-\$33,962,412</b>	<b>0.3</b>

5 Based on the Company's analysis, the Energy Efficient Equipment  
 6 Rebate Program, Home Energy Report Program, Residential New  
 7 Construction Program, and High Efficiency Discount Program are  
 8 cost-effective under the UC test, and the Home Energy Report  
 9 Program and High Efficiency Discount Rate Program are cost-  
 10 effective under the TRC test.

11 **Q. BASED ON YOUR REVIEW OF THE COMPANY'S COST**  
 12 **EFFECTIVENESS ANALYSIS, DO YOU HAVE ANY CONCERNS?**

13 A. For purposes of this proceeding, the Public Staff believes that the  
 14 Company's calculations and cost-effectiveness test results are  
 15 sufficient for approval of the programs as part of a pilot; however, we  
 16 do have concerns with some of the inputs that feed into the

1 calculations, and the Public Staff will carefully review these inputs as  
2 part of the evaluation of the pilot.

3 **Q. WHAT ARE YOUR CONCERNS WITH THE INPUTS TO THE COST**  
4 **EFFECTIVENESS ANALYSIS?**

5 A. As stated above, the Company has been offering EE programs  
6 (Energy Efficient Equipment Rebate, High Efficiency Discount Rate  
7 Program, and Conservation Education Program) to its customers for  
8 over a decade. The Public Staff's review of the program evaluation  
9 information provided in the annual reports has revealed two major  
10 concerns with some of the inputs currently used.

11 Over ten years have elapsed since the Approval Order, and it  
12 appears that the Company has not performed any comprehensive  
13 EM&V or reviewed its original assumptions regarding the appropriate  
14 NTG ratio. The Company continues to use gross savings, instead of  
15 applying an NTG ratio for each program measure included in the  
16 proposed EE portfolio.

17 Through discovery, the Company indicated that it based measure  
18 savings upon estimates, and it has not performed any EM&V on its  
19 portfolio of programs to determine savings since program inception.

20 The Public Staff has significant reservations with the use of gross  
21 savings, which is essentially a universal NTG ratio of 1.0. Recent  
22 electric utility EM&V reports for EE programs that offer electric

1 versions of similar measures to those offered by PSNC's programs  
2 report an NTG ratio of less than 1.0. Given these reservations, it is  
3 appropriate to utilize other EM&V data that could serve as a proxy  
4 for the Company conducting its own battery of NTG-related surveys.  
5 For example, EM&V of similar EE programs offered by the electric  
6 IOUs, or comparable natural gas utility programs, could provide an  
7 initial estimate of NTG until the Company conducts its own EM&V,  
8 or, alternatively, be incorporated into the Company's EM&V if the  
9 participant data is shown to be comparable. The Public Staff has  
10 agreed with the use by electric membership cooperatives of EE  
11 savings and inputs from the EM&V results of similar electric IOU EE  
12 programs to comply with N.C. Gen. Stat. § 62-133.8. Such proxy data  
13 suggest that overall program level NTG ratios may be in the range of  
14 0.65-0.75.<sup>6</sup>

15 The second concern is with the application and determination of  
16 avoided cost benefits in the model. The Public Staff has significant  
17 experience with the establishment of the avoided cost benefits  
18 utilized in an EE program's cost benefit analysis. Over the last ten  
19 years, the electric IOUs have used avoided cost benefits in their cost  
20 effectiveness evaluations, based on their integrated resource

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<sup>6</sup> See EM&V for the Residential and Non-Residential Smart Saver Programs, Docket No. E-7, Sub 1230, Evans Exhibit E. Nexant performed this EM&V report.



1 planning and PURPA-related<sup>7</sup> avoided cost proceedings. However,  
2 the natural gas utilities do not have a similar proceeding to establish  
3 avoided costs, including appropriate calculation methodologies.

4 For this proceeding, the Company developed avoided cost benefits  
5 to calculate the cost-effectiveness of the EE programs. The Public  
6 Staff continues to evaluate these inputs and the methodology  
7 associated with avoided cost benefits. However, with the exception  
8 of the High Efficiency Discount Rate program, for purposes of this  
9 proceeding and for considerations of program approval, the Public  
10 Staff does not object to the Company's inputs and calculations. In  
11 future proceedings involving cost effectiveness for natural gas EE  
12 programs, the Public Staff recommends that the Commission require  
13 the Company to file testimony that explains the reasonableness of  
14 all proposed avoided costs that are included in its analysis.

15 **Q. ARE THERE OTHER CONCERNS WITH THE PORTFOLIO THAT**  
16 **YOU WOULD LIKE TO DISCUSS?**

17 A. Yes. Our investigation of the existing and proposed portfolio of  
18 programs has raised concerns with the following:

19 1) The Company's proposal to offer measures to both  
20 Residential and Commercial customers in its Energy Efficient

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<sup>7</sup> Public Utility Regulatory Policies Act (PURPA, Pub. L. 95-617, 92 Stat. 3117, enacted November 9, 1978).

- 1 Equipment Rebate Program, without addressing the  
2 appropriate level of cost recovery for each class;
- 3 2) The Company's High Efficiency Discount Rate Program and  
4 its potential for dual counting of benefits;
- 5 3) The interaction between the Company's High Efficiency  
6 Discount Rate program and the Residential New Construction  
7 Program.

8 **Q. PLEASE EXPLAIN YOUR CONCERNS WITH THE ENERGY**  
9 **EFFICIENT EQUIPMENT REBATE PROGRAM.**

- 10 A. The Public Staff does not have concerns with the Company offering  
11 a cost-effective Energy Efficient Equipment Rebate program to its  
12 customers. However, to ensure appropriate assignment of costs to  
13 rate classes, the Public Staff recommends that the Company split the  
14 Energy Efficient Equipment Rebate Program into two separate  
15 programs, a Residential and a Commercial program.

16 **Q. PLEASE EXPLAIN YOUR CONCERNS REGARDING THE HIGH**  
17 **EFFICIENCY DISCOUNT RATE PROGRAM AND ITS**  
18 **INTERACTION WITH THE RESIDENTIAL NEW CONSTRUCTION**  
19 **PROGRAM.**

- 20 A. The High Efficiency Discount Rate program originally offered  
21 discounted rates to residential and commercial customers whose  
22 dwellings or commercial buildings met qualifying standards and who

1 provided proof of qualification. The qualifying standards of the  
2 program at the time were Energy Star or equivalent dwellings, and  
3 LEED or equivalent commercial buildings. The Modification Order  
4 allowed PSNC to remove the equivalency standards due to  
5 administrative difficulties. In this proceeding, the Company is  
6 proposing to expand the qualifications of this High Efficiency  
7 Discount Rate program to include dwellings built in accordance with  
8 the HERO code.

9 Additionally, the Company in this proceeding has proposed to begin  
10 offering a Residential New Construction program. This program, as  
11 described earlier in our testimony, focuses on building homes in  
12 accordance with the HERO code.

13 Due to the nature of the program's qualifications, homes constructed  
14 under the Residential New Construction Program will then be eligible  
15 for the High Efficiency Discount Rate Program.

16 Having two programs that rely on the same building code  
17 qualification and, thus, act concomitantly, will make it difficult to  
18 determine which program should be assigned credit for the achieved  
19 savings from measures installed, and could lead to one or both  
20 programs failing to achieve cost-effectiveness. In other words, the  
21 savings generated from the Residential New Construction program

1 should not be counted in the cost benefit analysis of the Company's  
2 High Efficiency Discount Rate program.

3 **Q. CAN THIS POTENTIAL FOR DOUBLE COUNTING OF THE**  
4 **BENEFITS OCCUR ELSEWHERE IN THE PORTFOLIO?**

5 A. Yes, the same overlap can occur between the High Efficiency  
6 Discount Rate Program and the Energy Efficient Equipment Rebate  
7 Program. A home currently on the discount rate remains eligible to  
8 participate in the rebate program. Thus, for purposes of cost  
9 effectiveness evaluations, PSNC should not claim energy savings for  
10 the High Efficiency Discount Rate program resulting from equipment  
11 replaced via the Energy Efficient Equipment Rebate program.

12 **Q. BASED ON YOUR CONCERNS OUTLINED ABOVE, WHAT IS**  
13 **YOUR RECOMMENDATION AS TO APPROVAL OF THE**  
14 **COMPANY'S PORTFOLIO OF PROGRAMS?**

15 A. The Public Staff has promoted, and will continue to promote, cost  
16 effective EE offered to customers through utility-sponsored  
17 programs. However, the Public Staff must ensure that the inputs  
18 used to model cost effectiveness result from sound assumptions  
19 based on relevant and contemporaneous data applicable to the  
20 Company's service territory. Additionally, since avoided costs are the  
21 primary determinant of benefits for a program, the assumptions and

1 inputs used to calculate the benefits are critical elements in the  
2 review of program cost effectiveness.

3 Based on our review, we conclude that the Company's approach to  
4 modeling the programs is sound, but the inputs need to be updated  
5 to reflect more accurate data. With the exception of the Company's  
6 High Efficiency Discount Rate program, the Public Staff recommends  
7 approval of the Company's portfolio of programs (those included in  
8 this filing as well as the Conservation Education Program), as pilot  
9 programs for a three-year period. Operating the programs as pilots  
10 will allow the Company time to conduct EM&V and use the  
11 information gathered to refine its inputs, assumptions, and  
12 calculations of cost effectiveness.

13 During this three-year period, the Company should work to evaluate  
14 and broaden its efforts to market and educate its customers about  
15 EE, increase participation in the programs, and evaluate the  
16 performance of the programs. The Public Staff also encourages the  
17 Company to seek Commission approval of the pilot as a full program  
18 before the end of the three-year period if participation and  
19 performance demonstrate satisfactory cost effectiveness.  
20 Conversely, with the exception of Residential Low-Income Program,  
21 if any pilot measure or program is underperforming and cannot be

1 satisfactorily remediated, the Company should seek to terminate the  
2 measure or program before the end of the three-year period.

3 Additionally, the Public Staff strongly encourages the Company to  
4 pursue ways to address and enhance its delivery of EE measures to  
5 residential low income customers.

6 **Q. PLEASE EXPLAIN YOUR RECOMMENDATION FOR THE**  
7 **COMPANY'S HIGH EFFICIENCY DISCOUNT RATE PROGRAM.**

8 A. Since it may be difficult for the High Efficiency Discount Rate  
9 program to generate savings apart from savings resulting from the  
10 Residential New Construction program or other EE programs, the  
11 Public Staff recommends that this program remain in the Company's  
12 base rates at this time, rather than being included in the Company's  
13 EE portfolio as an EE program.

14 **Evaluation, Measurement, and Verification**

15 **Q. PLEASE DESCRIBE THE COMPANY'S PAST EFFORTS IN THE**  
16 **AREAS OF EM&V.**

17 A. As stated earlier, the Company currently files an annual report that  
18 provides a description of each program, summary of the measures  
19 involved along with the applicable measure efficiency standards, the  
20 number of participants for each measure, program expenditures, and  
21 therm savings. While these reports have met past Commission  
22 requirements, the Public Staff believes that as the Company

1 expands its offerings and seeks annual recovery through a rider, the  
2 Company should increase the level of rigor in its examination of  
3 program performance.

4 **Q. WHAT EM&V IS THE COMPANY PROPOSING FOR THESE NEW**  
5 **OR MODIFIED PROGRAMS?**

6 A. In response to discovery, the Company stated:

7 The Company has not yet developed EM&V plans for each  
8 program. The budgets for the proposed programs include  
9 EM&V allocation and anticipate that both impact and  
10 process evaluations will be conducted for each program  
11 over the initial 5-year program period included in the cost-  
12 benefit analysis. Impact evaluation activities are expected  
13 to focus on verifying savings in each program and may  
14 include billing analysis, engineering calculations, and  
15 primary data collection. Process evaluation activities are  
16 expected to focus on the operations of the program and  
17 customer attitudes and engagement.

18 **Q. DOES THE PUBLIC STAFF AGREE WITH THE COMPANY'S**  
19 **APPROACH TO EM&V?**

20 A. In the context of gas utility regulation, EM&V has not been  
21 emphasized to the same extent as it has for regulated electric utilities  
22 and unregulated utilities subject to N.C. Gen. Stat. § 62-133.8. The  
23 natural gas utilities do not receive a financial incentive as provided  
24 to the electric IOUs based on the savings achieved by their EE  
25 programs, as determined through EM&V.

26 The Approval Order discusses evaluation of EE programs in more  
27 detail:

1           The Commission notes that PSNC did not provide a  
2           definition of the “Utility Cost Test,” and did not state the  
3           Utility Cost Test’s assumptions or offer details to support  
4           the Company’s findings. The Commission is generally  
5           familiar with the concept of a Utility Cost Test and no  
6           party protested the lack of supporting information with  
7           PSNC’s filings. The Public Staff noted that the cost-  
8           effectiveness of the proposed programs, as estimated by  
9           PSNC, are dependent upon several key untested  
10          variables and assumptions and therefore the actual cost-  
11          effectiveness of the programs could differ from PSNC’s  
12          estimates. The Public Staff commented that it believes  
13          that PSNC’s proposed programs, as revised, appear to  
14          be reasonable in that they offer customers tangible ways  
15          to conserve natural gas.<sup>8</sup>

16          The Public Staff supports the Company’s path toward EM&V  
17          planning and is committed to working with the Company to refine the  
18          process to ensure that it is able to determine “net” program savings  
19          for each program. The fact that the Company has not fully developed  
20          its evaluation plans provides further support for the Public Staff’s  
21          recommendation that the Commission approve the programs as  
22          pilots.

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

24   **A.    Yes.**

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<sup>8</sup> *Order Approving Conservation Programs*, Docket G-5 Sub 495A (March 20, 2009).



1 JAMES M. SINGER

2 I am a graduate of Penn State University with a Bachelor of Science  
3 degree in Mechanical Engineering. Upon graduation, I worked as a Station  
4 Engineer at FirstEnergy Corp., responsible for maintaining, troubleshooting,  
5 and optimizing unit equipment and operations. I also held positions as a  
6 Project Engineer and as an Analyst in FirstEnergy's Commodity Operations  
7 group, where I performed benefit-cost analysis for projects throughout the  
8 company.

9 In 2008, I accepted a position with Progress Energy as a Boiler  
10 Engineer, responsible for operational and reliability issues for two top-tier  
11 boilers and performing boiler inspections across the Progress Energy fleet.

12 After Progress Energy's merger with Duke Energy, I transitioned to  
13 a Project Manager role, focusing on gas turbine overhaul and generator  
14 repair projects.

15 In 2020, I worked as Consulting Engineer with Novo Nordisk in  
16 Clayton, NC, on the DAPI-US project - the largest pharmaceutical  
17 manufacturing project in the world. I was responsible for reviewing turnover  
18 documentation from the general contractor and troubleshooting operating  
19 systems.

20 I joined the Public Staff Energy Division in March of 2021.

**QUALIFICATIONS AND EXPERIENCE**

DAVID M. WILLIAMSON

1  
2  
3 I am a 2014 graduate of North Carolina State University with a  
4 Bachelor of Science Degree in Electrical Engineering. I began my  
5 employment with the Public Staff's Electric Division in March of 2015. In  
6 August of 2020, the Electric Division merged with the Natural Gas Division  
7 to form the Energy Division, where I am a part of the Electric Section –  
8 Rates and Energy Services. My current responsibilities include reviewing  
9 applications, making recommendations for certificates of public  
10 convenience and necessity of small power producers, master meters, and  
11 resale of electric service, and interpreting and applying utility service rules  
12 and regulations. Additionally, I am currently serving as a co-chairman of the  
13 National Association of State Utility and Consumer Advocates' (NASUCA)  
14 DER and EE Committee.

15 My primary responsibility within the Public Staff is reviewing and  
16 making recommendations on DSM/EE filings for initial program approval,  
17 program modifications, EM&V evaluations, and ongoing program  
18 performance of DEC, DEP, and DENC's portfolio of programs. I have filed  
19 testimony in various DEC, DEP, and DENC DSM/EE rider proceedings, as  
20 well as recent general rate case proceedings.