SOUTHERN ENVIRONMENTAL LAW CENTER

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October 20, 2017

Via Electronic Filing and
Federal Express

Ms. Martha Lynn Jarvis
Chief Clerk
North Carolina Utilities Commission
430 North Salisbury Street
Dobbs Building
Raleigh, NC 27603-5918

RE: In the Matter of: Application of Duke Energy Progress, LLC for Adjustment of Rates and Charges Applicable to Electric Service in North Carolina; ***Docket No. E-2, Sub 1142***

Dear Ms. Jarvis:

Enclosed for filing in the referenced docket is the Testimony of Jonathan Wallach on behalf of The North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy. Pursuant to Commission Rule R1-28(e), we are also submitting fifteen (15) paper copies of the testimony and accompanying exhibits via Federal Express, for delivery on October 23, 2017.

By copy of this letter, I am serving all parties of record on the service list. Please let me know if you have any questions about this filing.

Sincerely,

s/ Robin G. Dunn
Administrative Legal Assistant

RGD
Enclosures
cc: Parties of Record

STATE OF NORTH CAROLINA

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of:	**)**	
	)	
Application of Duke Energy Progress, LLC	**)**	**Docket No. E-2, Sub 1142**
For Adjustment of Rates and Charges	**)**	
Applicable to Electric Service in	**)**	
North Carolina	**)**	

DIRECT TESTIMONY OF

JONATHAN WALLACH

ON BEHALF OF

THE NORTH CAROLINA JUSTICE CENTER, NORTH CAROLINA HOUSING COALITION, NATURAL RESOURCES DEFENSE COUNCIL, AND SOUTHERN ALLIANCE FOR CLEAN ENERGY

Resource Insight, Inc.

OCTOBER 20, 2017

I. INTRODUCTION AND SUMMARY

Q: PLEASE STATE YOUR NAME, OCCUPATION, AND BUSINESS ADDRESS.

A: My name is Jonathan F. Wallach. I am Vice President of Resource Insight, Inc., 5 Water Street, Arlington, Massachusetts.

Q: PLEASE SUMMARIZE YOUR PROFESSIONAL EXPERIENCE.

A: I have worked as a consultant to the electric power industry since 1981. From 1981 to 1986, I was a Research Associate at Energy Systems Research Group. In 1987 and 1988, I was an independent consultant. From 1989 to 1990, I was a Senior Analyst at Komanoff Energy Associates. I have been in my current position at Resource Insight since 1990.

Over the past four decades, I have advised and testified on behalf of clients on a wide range of economic, planning, and policy issues relating to the regulation of electric utilities, including: electric-utility restructuring; wholesale-power market design and operations; transmission pricing and policy; market-price forecasting; market valuation of generating assets and purchase contracts; power-procurement strategies; risk assessment and mitigation; integrated resource planning; mergers and acquisitions; cost allocation and rate design; and energy-efficiency program design and planning.

My resume is attached as Exhibit JFW-1.

Q: HAVE YOU TESTIFIED PREVIOUSLY IN UTILITY PROCEEDINGS?

A: Yes. I have sponsored expert testimony in more than eighty state, provincial, and federal proceedings in the U.S. and Canada. I include a detailed list of my previous testimony in Exhibit JFW-1.

Q: ON WHOSE BEHALF ARE YOU TESTIFYING?

A: I am testifying on behalf of the North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy.

Q: ARE YOU SPONSORING ANY EXHIBITS?

A: Yes. I am sponsoring the following exhibits:

- Exhibit JFW-1: Resume of Jonathan Wallach, Resource Insight, Inc.
- Exhibit JFW-2: Citations to Marginal-Price Elasticity Studies

Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A: On June 1, 2017, Duke Energy Progress, LLC ("DEP" or "the Company") filed an application (including supporting testimony) for authority to increase electric rates. My testimony responds to supporting testimony by Company witnesses Janice Hager regarding the Company's cost of service study ("COSS") and by Steven B. Wheeler regarding the Company's proposal to increase the monthly basic customer charge for residential customers based on the results of the COSS.[1]

Q: PLEASE SUMMARIZE YOUR FINDINGS AND RECOMMENDATIONS.

A: The Company has not justified its proposal to increase the residential basic customer charge. As explained in more detail below, the proposed increase would:

[1] The Company proposes to increase the basic customer charge for Residential Service Schedules RES, R-TOUD, and R-TOU by equal amounts based on the results of the COSS. In addition, DEP proposes to charge Schedule R-TOUD and Schedule R-TOU customers an additional monthly fixed charge to cover the cost of time-of-use meters. I do not address the Company's proposal with regard to the additional charge for time-of-use meters.

- Inappropriately shift recovery of load-related costs to the residential basic customer charge.
- Exacerbate subsidization of high-usage residential customers' costs by low-usage customers, and thereby inequitably increase bills for the Company's smallest residential customers.
- Dampen price signals to consumers for investing in energy efficiency or distributed renewable generation.

Consequently, the Commission should reject the Company's proposal to increase the monthly basic customer charge for residential customers.

Q: HOW IS THE REST OF YOUR TESTIMONY ORGANIZED?

A: In Section II, I describe the Company's proposal for increasing the residential basic customer charge. In Section III, I discuss how the Company's proposal would result in a residential basic customer charge that exceeds actual customer-related cost per residential customer and thereby leads to cost subsidization within the residential class. In Section IV, I explain how the residential basic customer charge proposed by DEP would inappropriately shift recovery of load-related costs from the volumetric energy rate to the basic customer charge and thereby dampen energy price signals. Finally, Section V summarizes my conclusions and recommendations.

II. DEP'S PROPOSAL TO INCREASE THE BASIC CUSTOMER CHARGE

Q: WHAT IS THE BASIC CUSTOMER CHARGE?

A: The basic customer charge is a fixed fee charged to each customer on their monthly bill regardless of the customer's energy usage during that month.

Q: WHAT IS THE COMPANY'S PROPOSAL WITH RESPECT TO THE BASIC CUSTOMER CHARGE FOR RESIDENTIAL CUSTOMERS?

A: For residential customers without time-of-use ("TOU") meters taking service under Residential Service Schedule RES, DEP proposes to increase the basic customer charge from $11.13 to $19.50 per customer per month.[2] The proposed $8.37 increase represents a 75% increase over the current basic customer charge.

For residential customers taking service under either Residential Service Time-of-Use Schedule R-TOUD or Residential Service Time-of-Use Schedule R-TOU, the basic customer charge is currently set at the same rate as for RES customers ($11.13) plus $3.00 for TOU meter costs, for a total charge of $14.13 per customer per month. The Company proposes to increase the basic customer charge for these customers by the same amount as proposed for RES customers ($8.37), but to reduce the adder for TOU meters from $3.00 to $2.85.[3] The net effect would be to increase the basic customer charge R-TOUD and R-TOU customers from $14.13 to $22.35 per customer per month, or by about 58%.

Q: WHAT IS THE COMPANY'S RATIONALE FOR INCREASING THE BASIC CUSTOMER CHARGE FOR RESIDENTIAL CUSTOMERS?

A: Company witness Wheeler contends that the Company's proposal would result in a residential basic customer charge that better reflects the customer-related cost per residential customer, as indicated by the results of the COSS:

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[2] Direct Testimony *of Steven B. Wheeler for Duke Energy Progress, LLC*, Docket No. E-2, Sub 1142, 15 (June 1, 2017) [hereinafter "Wheeler Direct"].

[3] *Id.*, 16.

> DE Progress requests to increase the monthly Basic Customer Charge from $11.13 to $19.50 to better recover customer-related cost identified in the unit cost study for the residential rate class. Although the Company's analysis supports increasing the Basic Customer Charge to $27.82, we have suggested a smaller increase to moderate any affect [*sic.*] on low usage customers.[4]

Q: WHY DOES DEP WANT TO MOVE THE RESIDENTIAL BASIC CUSTOMER CHARGE CLOSER TO THE COSS ESTIMATE OF CUSTOMER-RELATED COST PER RESIDENTIAL CUSTOMER?

A: The Company offers two justifications for this proposal. First, Mr. Wheeler asserts that increasing the basic customer charge would mitigate purported subsidization of low-usage customers' customer-related costs by larger residential customers.[5] Second, Mr. Wheeler claims that increasing the residential customer charge to better reflect customer-related embedded costs would improve price signals for promoting economically efficient behavior by residential customers.[6]

I address each of these justifications in the following two sections.

III. DEP'S PROPOSAL TO INCREASE THE BASIC CUSTOMER CHARGE WOULD EXACERBATE INTRA-CLASS COST SUBSIDIZATION

Q: WHAT IS THE BASIS FOR MR. WHEELER'S ASSERTION THAT INCREASING THE BASIC CUSTOMER CHARGE WOULD MITIGATE SUBSIDIZATION WITHIN THE RESIDENTIAL CLASS?

A: Mr. Wheeler relies on the results of the COSS to support this claim. Specifically, Mr. Wheeler reports in his direct testimony that the COSS estimates a customer-

[4] *Id.*, 15.

[5] *Id.*, 7.

[6] DEP response to NCSEA Data Request Item No. 10-9.

related cost of $27.82 per residential customer per month. In other words, the COSS estimates that the "minimum" cost to serve a residential customer – i.e., the cost to serve a residential customer regardless of that customer's usage – is $27.82 per month. With the basic customer charge currently set at $11.13 per customer per month, the COSS result implies that $16.69 of the minimum cost to serve a residential customer is currently being recovered through residential volumetric energy rates.

If Mr. Wheeler is correct that the COSS reasonably estimates the customer-related cost per residential customer, the remaining $16.69 of customer-related costs currently being recovered through the volumetric energy rate represents a subsidy payment from customers with above-average usage to those with below-average usage. Specifically, customers with above-average usage would pay more than $16.69 per month toward recovery of minimum costs through the energy rate, while customers with below-average usage would pay less than $16.69 per month. Thus, under Mr. Wheeler's rationale, the Company's proposal to increase the residential basic customer charge from $11.13 to $19.50 would reduce the amount of customer-related costs recovered through the energy rate and thereby reduce the alleged subsidy payment from customers with above-average usage to those with below-average usage.

Q: DO YOU AGREE WITH MR. WHEELER'S CLAIM THAT INCREASING THE BASIC CUSTOMER CHARGE WOULD REDUCE SUBSIDIZATION OF CUSTOMER-RELATED COSTS WITHIN THE RESIDENTIAL CLASS?

A: No. To the contrary, I conclude from a review of the COSS that residential customers with above-average usage are currently being subsidized by customers with below-average usage. Thus, the Company's proposal would actually

exacerbate intra-class subsidization – and thereby disproportionately and inequitably increase bills for low-usage customers – by shifting load-related costs inappropriately from high-usage to low-usage customers.

Q: HOW DID YOU ARRIVE AT THIS CONCLUSION?

A: Based on my review, I find that the COSS relies on the results of a minimum system analysis to estimate a customer-related distribution plant cost per residential customer. As discussed below, it is not appropriate to rely on the results of minimum system analyses to estimate *per-customer* minimum plant costs, since such analyses typically overstate the true minimum cost per customer for distribution plant. Correcting for this overstatement, I find that the total customer-related cost per residential customer is less than the amount currently being recovered through the basic customer charge, which indicates that low-usage customers are, in fact, currently subsidizing high-usage customers.

Q: HOW DOES THE COSS DERIVE THE CUSTOMER-RELATED COST PER RESIDENTIAL CUSTOMER?

A: In order to allocate costs to customer classes, the COSS first separates total costs into production, transmission, distribution, and customer functions. Costs in each function are then separated into energy-, demand-, or customer-related portions (i.e., classifications) based on whether costs are considered to be "caused" by energy sales, peak demand, or the number of customers, respectively. Finally, costs classified as either energy-, demand-, or customer-related are allocated to customer classes in proportion to each class's contribution to total-system energy sales, peak demand, or number of customers, respectively.

According to Company witness Hager, the cost of meters, service drops, and customer services are deemed to be customer-related in the COSS. In addition, as discussed in detail below, the COSS classifies a portion of pole, conduit, conductor, and secondary transformer costs as customer-related, based on the results of a minimum system analysis of such distribution plant costs.[7] The COSS derives customer-related cost per residential customer by taking the sum of the residential allocation of meter, service-drop, customer-service, and customer-related distribution plant costs and then dividing that sum by the number of residential customers.

Q: PLEASE DESCRIBE THE COMPANY'S MINIMUM SYSTEM ANALYSIS OF POLE, CONDUIT, CONDUCTOR, AND SECONDARY TRANSFORMER COSTS.

A: The Company's minimum system analysis attempts to estimate the cost to install the same amount of poles, wires, conduits, and transformers as are currently on the distribution system, assuming that each piece of distribution equipment were sized to meet minimal load. In other words, the Company's minimum system analysis attempts to estimate the cost to exactly replicate the configuration of the existing distribution system using minimum-size equipment.

In the COSS, the "minimum" portion of distribution plant costs (as determined by the minimum system analysis) is classified as customer-related and then allocated to customer classes in proportion to the number of customers in each class. As discussed above, the customer-related distribution plant cost per residential customer is derived in the COSS as the residential-allocated customer-related plant cost divided by the number of residential customers.

[7] DEP response to SELC Data Request Item No. 1-11.

Q: IS IT REASONABLE TO RELY ON THE RESULTS OF A MINIMUM SYSTEM ANALYSIS TO ESTIMATE THE CUSTOMER-RELATED DISTRIBUTION PLANT COST PER CUSTOMER?

A: No. As noted above, the purpose of a minimum system analysis is to determine the portion of distribution plant costs to be allocated to customer classes based on the number of customers in each class. The Company has not offered any evidence that its minimum system analysis also yields reliable estimates of the customer-related distribution plant cost *per customer*.

To the contrary, minimum system analyses overstate the minimum plant cost per customer because they assume that a minimum system carrying minimal load would have the same number of poles, conductor-feet, and transformers as currently installed in a distribution system designed to carry actual distribution load. In other words, the minimum system method assumes that each piece of distribution equipment would serve the same number of customers on average, regardless of whether the customers are average-sized (as for the actual system) or have minimal demand (as for the hypothetical minimum system.)

This is not a realistic assumption, since even a minimally sized piece of distribution equipment should be able to serve more minimal-demand customers than the number of average-demand customers served by average-sized distribution equipment. Consequently, the true minimum distribution plant cost to serve a customer with minimal usage is likely to be less than that derived using a minimum system analysis. Indeed, since the minimum system method attempts to estimate the plant cost incurred regardless of usage – i.e., the cost to serve load approaching zero, the true minimum plant cost per customer is zero since distribution equipment that carries zero load can serve an infinite number of customers with zero load.

Q: HAS DEP ESTIMATED THE CUSTOMER-RELATED COST PER RESIDENTIAL CUSTOMER BASED ON THE TRUE MINIMUM PLANT COST PER CUSTOMER?

A: Yes. In response to a data request, DEP modified its COSS to estimate the customer-related cost per residential customer with a zero minimum plant cost per customer.[8] Specifically, DEP classified all pole, conduit, conductor, and line transformer costs as demand-related for this version of the COSS. This modified COSS therefore includes only the cost of meters, service drops, and customer services in the calculation of customer-related costs. In this case, the modified COSS estimates a customer-related cost per residential customer of $8.54 per customer per month.

To put this in perspective, the current basic customer charge for Schedule RES customers of $11.13 per month is already about 30% higher than the customer-related embedded cost per customer derived in the modified COSS.

Q: WHAT DOES THIS RESULT TELL US ABOUT COST SUBSIDIZATION WITHIN THE RESIDENTIAL CLASS?

A: The fact that the current basic customer charge exceeds the true customer-related embedded cost per residential customer indicates that a sizeable portion of demand-related distribution plant costs are inappropriately being recovered through the current basic customer charge. This means that residential customers with below-average usage currently bear a disproportionate share of demand-related distribution plant costs and consequently subsidize larger customers under current rates, not the other way around as Mr. Wheeler contends.

[8] Supplemental response to SELC Data Request Item No. 1-13.

Q: HOW WOULD THE COMPANY'S PROPOSAL TO INCREASE THE BASIC CUSTOMER CHARGE AFFECT COST SUBSIDIZATION WITHIN THE RESIDENTIAL CLASS?

A: Since the current basic customer charge already exceeds the true customer-related embedded cost per residential customer, increasing the basic customer charge would increase the amount of demand-related distribution plant costs recovered through the basic customer charge and thereby exacerbate the subsidization of high-usage customers' costs by low-usage customers. Decreasing the basic customer charge, on the other hand, would reduce the subsidy payment from low-usage to high-usage residential customers by shifting demand-related distribution plant costs from the basic customer charge to the volumetric energy rate.

Q: WHAT IS THE EXTENT OF THE INTRA-CLASS SUBSIDIZATION UNDER THE COMPANY'S PROPOSAL TO INCREASE THE RESIDENTIAL BASIC CUSTOMER CHARGE FROM $11.13 TO $19.50?

A: As explained above, the $8.37 increase in the residential basic customer charge proposed by DEP represents demand-related distribution plant costs that would be recovered from each residential customer every month through a fixed charged on the customer's bill. The COSS assumes about 1.16 million residential customers in the test year, which means that an additional $116.5 million of demand-related distribution plant costs would be recovered annually through the basic customer charge under the Company's proposal.[9]

If the additional demand-related costs recovered through the residential basic customer charge under the Company's proposal were instead recovered

[9] The number of residential customers assumed in the COSS is provided in NCUC Form E-1 Data Request, Item No. 45(e).

through the volumetric energy rate, each residential customer would contribute to recovery of these costs in proportion to their usage. The COSS assumes residential sales in the test year of about 15.5 million megawatt-hours, which means that the additional $116.5 million of demand-related costs that would be recovered through the basic customer charge under the Company's proposal would be charged at a rate of 0.75¢/kWh if such costs instead continued to be recovered through the energy rate.[10] In that case, a residential customer with monthly usage of 500 kWh would contribute about $45 per year toward recovery of such costs while a customer with monthly usage of 1,500 kWh would contribute about $135 per year. Thus, the 1,500 kWh customer would contribute three times more than the 500 kWh customer, in direct proportion to their usage.

In contrast, under the Company's proposal to recover an additional $116.5 million of demand-related costs through the basic customer charge, each residential customer would contribute about $100 per year toward recovery of such costs regardless of that customer's usage. A 500 kWh customer would therefore pay more than double their fair share of these demand-related costs under the Company's proposal while a 1,500 kWh customer would pay about 74% of their fair share.

IV. DEP'S PROPOSAL TO INCREASE THE BASIC CUSTOMER CHARGE WOULD DAMPEN ECONOMICALLY EFFICIENT PRICE SIGNALS

Q: WOULD THE COMPANY'S PROPOSAL TO INCREASE THE RESIDENTIAL BASIC CUSTOMER CHARGE IMPROVE PRICE SIGNALS, AS MR. WHEELER CONTENDS?

[10] The amount of residential sales assumed in the COSS is provided in NCUC Form E-1 Data Request, Item No. 45(e).

A: No. As discussed below, DEP proposes to set the residential basic customer charge at a rate that exceeds the minimum cost to connect a residential customer. The Company's proposal would shift recovery of costs which are appropriately recovered through the volumetric energy rates to the basic customer charge, resulting in an energy rate that understates the extent to which the Company's costs are driven by customer usage. Thus, contrary to Mr. Wheeler's assertion, the Company's proposal would dampen energy price signals and discourage economically efficient behavior by residential customers.

Q: HOW SHOULD RESIDENTIAL ENERGY AND CUSTOMER CHARGES BE DESIGNED IN ORDER TO PROVIDE PRICE SIGNALS FOR EFFICIENT CUSTOMER BEHAVIOR?

A: Customer charges are intended to recognize that customers contribute equally to certain distribution costs regardless of each customer's energy usage, whereas energy rates recognize that customers of different sizes and load profiles contribute to other distribution, transmission, and generation costs at different levels. If usage-driven costs are inappropriately collected through fixed customer charges, then customers will have reduced incentives to invest in energy efficiency or distributed renewable generation.[11]

Accordingly, volumetric energy rates should be set at levels that recover costs that tend to increase with customer usage. Energy rates should include costs directly driven by customer usage, such as plant, fuel, and operation and maintenance costs. They should also include costs that tend to rise indirectly

[11] National Association of Regulatory Utility Commissioners, *Distributed Energy Resources* Rate *Design and Compensation*, 118 (November 2016), available at https://pubs.naruc.org/pub/19FDF48B-AA57-5160-DBA1-BE2E9C2F7EA0.

with customer usage level, such as collection costs, uncollectible costs, and some other customer-service costs.

In contrast, the customer charge is intended to reflect the cost to connect to the distribution system a customer who uses very little or zero energy.[12] Such "minimum connection costs" are generally limited to plant and maintenance costs for a service drop and meter, along with meter-reading, billing, and other customer-service expenses.[13]

Q: WHAT IS THE MINIMUM COST TO CONNECT A RESIDENTIAL CUSTOMER IN THE COMPANY'S SERVICE TERRITORY?

A: As discussed in Section III, DEP estimates a minimum connection cost for residential customers – the cost per residential customer for meters, service drops, and customer services – of $8.54 per month.

Q: HOW DOES THE COMPANY'S PROPOSED CUSTOMER CHARGE COMPARE TO THE MINIMUM CONNECTION COST FOR A RESIDENTIAL CUSTOMER?

A: The $19.50 basic customer charge proposed by DEP is more than double the estimated minimum connection cost. The amount in excess of minimum connection cost represents usage-related costs that are appropriately recovered in the volumetric energy rate. However, under the Company's proposal, this excess over the minimum connection cost would instead be recovered through the basic customer charge. This shift in the recovery of usage-related costs from the

[12] *See, e.g.,* Jim Lazar & Wilson Gonzalez, *Smart Rate Design for a Smart Future*, Regulatory Assistance Project, 36 (July 2015), available at http://www.raponline.org/wp-content/uploads/2016/05/rap-lazar-gonzalez-smart-rate-design-july2015.pdf..

[13] A very small customer in multi-family housing might not require their own service drop. If so, the cost to connect such a customer would not include the cost of a service drop.

volumetric energy rate to the basic customer charge would dampen price signals and discourage economically efficient behavior by residential customers.

Q: HOW DOES THE COMPANY'S PROPOSAL TO INCREASE THE BASIC CUSTOMER CHARGE TO $19.50 AFFECT THE SCHEDULE RES ENERGY RATE?

A: With the basic customer charge set at $19.50, I estimate that the annual energy rate would increase to 10.15¢/kWh in order to recover the proposed allocation of adjusted test year revenue requirements to Schedule RES customers.[14] If, instead, the basic customer charge remained at its current rate of $11.13, the energy rate would have to be increased to 10.92¢/kWh to recover the same allocated revenue requirement.[15] Thus, the energy rate under the Company's proposal to increase the basic customer charge by $8.37 would be 0.77¢/kWh, or about 7.0%, less than the energy rate without the proposed increase to the basic customer charge.

Q: TO WHAT EXTENT WOULD THE LOWER ENERGY RATE UNDER THE COMPANY'S PROPOSAL FOR THE BASIC CUSTOMER CHARGE DAMPEN PRICE SIGNALS FOR CONSERVATION?

A: Residential customers respond to the price incentives created by the electrical rate structure. Those responses are generally measured as price elasticities, i.e., the ratio of the percentage change in consumption to the percentage change in price. Price elasticities are generally low in the short term and rise over several years, because customers have more options for increasing or reducing energy

[14] Based on data provided in response to SELC Data Request Item No. 1-1, I estimate the annual energy rate as the average of the summer and non-summer energy rates proposed by DEP, weighted by the amount of energy sales in the summer and non-summer periods.

[15] *Id.*

usage in the medium to long term. For example, a review by Espey and Espey (2004) of 36 articles on residential electricity demand published between 1971 and 2000 reports short-run elasticity estimates of about −0.35 on average across studies and long-run elasticity estimates of about −0.85 on average across studies.[16] In other words, on average across these studies, consumption decreased by 0.35% in the short term and by 0.85% in the long term for every 1% increase in price.

Studies of electric price response typically examine the change in usage as a function of changes in the marginal rate paid by the customer.[17] Table 1 lists the results of seven studies of marginal-price elasticity over the last forty years.[18]

Table 1: Summary of Marginal-Price Elasticities

Authors	Date	Elasticity Estimates
Acton, Bridger, and Mowill	1976	−0.35 to −0.7
McFadden, Puig, and Kirshner	1977	−0.25 without electric space heat and −0.52 with space heat
Barnes, Gillingham, and Hageman	1981	−0.55
Henson	1984	–0.27 to –0.30
Reiss and White	2005	−0.39
Xcel Energy Colorado	2012	–0.3 (at years 2 and 3)
Orans et al., on BC Hydro inclining-block rate	2014	–0.13 in 3rd year of phased-in rate

[16] The citation for this study is provided in Exhibit JFW-2.

[17] For Schedule RES customers, that would be the energy rate.

[18] The citations for these studies are provided in Exhibit JFW-2.

Q: WHAT WOULD BE A REASONABLE ESTIMATE OF THE MARGINAL-PRICE ELASTICITY FOR CHANGES IN THE RESIDENTIAL ENERGY RATE?

A: From Table 1, it appears that –0.3 would be a reasonable mid-range estimate of the impact over a few years.

Q: WHAT WOULD BE A REASONABLE ESTIMATE OF THE EFFECT ON ENERGY USE FROM A 7% REDUCTION TO THE SCHEDULE RES ENERGY RATE UNDER THE COMPANY'S PROPOSAL TO INCREASE THE BASIC CUSTOMER CHARGE?

A: An elasticity of –0.3 and a 7% reduction in marginal energy price would result in an increase in energy consumption of about 2%. This means that all else equal, Schedule RES load would be expected to increase by about 2% over a several-year period as a result of implementing the Company's proposed basic customer charge increase.

For comparison, I estimate that the energy savings from the Company's residential energy efficiency programs in both North and South Carolina will increase each year by an amount equivalent to about 0.5% of forecasted annual residential load.[19] Assuming that such savings are spread uniformly across all residential rate classes in the Company's North and South Carolina service territories, the consumption increase due to the Company's proposed increase in its basic customer charge (and the resulting decrease in the energy charge) would

[19] Based on data regarding residential energy efficiency savings for the entire DEP service territory provided in response to SELC Data Request Item No. 1-2 and on data regarding the Company's forecast of residential energy sales for the entire DEP service territory provided in Table C-5 of the 2016 Integrated Resource Plan.

undo about four years of Schedule RES energy savings from the residential energy efficiency portfolio.

V. CONCLUSIONS AND RECOMMENDATIONS

Q: WHAT DO YOU CONCLUDE WITH RESPECT TO THE COMPANY'S PROPOSAL TO INCREASE THE RESIDENTIAL BASIC CUSTOMER CHARGE TO $19.50?

A: The Company's proposal would inappropriately shift load-related costs from the volumetric energy rate to the basic customer charge, dampen price signals to consumers for reducing energy usage, disproportionately and inequitably increase bills for the Company's smallest residential customers, and exacerbate the subsidization of larger residential customers' costs by customers with below-average usage. Accordingly, the Commission should reject the Company's proposal to increase the monthly basic customer charge to $19.50 and instead find that it is reasonable to reduce the monthly charge to $8.54. In the alternative, the monthly basic customer charge should be maintained at its current level of $11.13.

Q: DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A: Yes.

CERTIFICATE OF SERVICE

I certify that the parties of record on the service list have been served with the Direct Testimony of Jonathan Wallach on Behalf of the North Carolina Justice Center, North Carolina Housing Coalition, Natural Resources Defense Council, and Southern Alliance for Clean Energy either by electronic mail or by deposit in the U.S. Mail, postage prepaid.

This the 20th day of October, 2017.

s/ Robin G. Dunn

Robin G. Dunn

Qualifications of

JONATHAN F. WALLACH

Resource Insight, Inc.
5 Water Street
Arlington, Massachusetts 02476

SUMMARY OF PROFESSIONAL EXPERIENCE

1990–Present **Vice President, Resource Insight, Inc.** Provides research, technical assistance, and expert testimony on electric- and gas-utility planning, economics, regulation, and restructuring. Designs and assesses resource-planning strategies for regulated and competitive markets, including estimation of market prices and utility-plant stranded investment; negotiates restructuring strategies and implementation plans; assists in procurement of retail power supply.

1989–90 **Senior Analyst, Komanoff Energy Associates.** Conducted comprehensive cost-benefit assessments of electric-utility power-supply and demand-side conservation resources, economic and financial analyses of independent power facilities, and analyses of utility-system excess capacity and reliability. Provided expert testimony on statistical analysis of U.S. nuclear plant operating costs and performance. Co-wrote *The Power Analyst*, software developed under contract to the New York Energy Research and Development Authority for screening the economic and financial performance of non-utility power projects.

1987–88 **Independent Consultant.** Provided consulting services for Komanoff Energy Associates (New York, New York), Schlissel Engineering Associates (Belmont, Massachusetts), and Energy Systems Research Group (Boston, Massachusetts).

1981–86 **Research Associate, Energy Systems Research Group.** Performed analyses of electric utility power supply planning scenarios. Involved in analysis and design of electric and water utility conservation programs. Developed statistical analysis of U.S. nuclear plant operating costs and performance.

EDUCATION

BA, Political Science with honors and Phi Beta Kappa, University of California, Berkeley, 1980.

Massachusetts Institute of Technology, Cambridge, Massachusetts. Physics and Political Science, 1976–1979.

PUBLICATIONS

"The Future of Utility Resource Planning: Delivering Energy Efficiency through Distributed Utilities" (with Paul Chernick), *International Association for Energy Economics Seventeenth Annual North American Conference* (460–469). Cleveland, Ohio: USAEE. 1996.

"The Price is Right: Restructuring Gain from Market Valuation of Utility Generating Assets" (with Paul Chernick), *International Association for Energy Economics Seventeenth Annual North American Conference* (345–352). Cleveland, Ohio: USAEE. 1996.

"The Future of Utility Resource Planning: Delivering Energy Efficiency through Distribution Utilities" (with Paul Chernick), *1996 Summer Study on Energy Efficiency in Buildings* 7(7.47–7.55). Washington: American Council for an Energy-Efficient Economy, 1996.

"Retrofit Economics 201: Correcting Common Errors in Demand-Side-Management Cost-Benefit Analysis" (with John Plunkett and Rachael Brailove). In proceedings of "Energy Modeling: Adapting to the New Competitive Operating Environment," conference sponsored by the Institute for Gas Technology in Atlanta in April of 1995. Des Plaines, Ill.: IGT, 1995.

"The Transfer Loss is All Transfer, No Loss" (with Paul Chernick), *Electricity Journal* 6:6 (July, 1993).

"Benefit-Cost Ratios Ignore Interclass Equity" (with Paul Chernick et al.), *DSM Quarterly*, Spring 1992.

"Consider Plant Heat Rate Fluctuations," *Independent Energy*, July/August 1991.

"Demand-Side Bidding: A Viable Least-Cost Resource Strategy" (with Paul Chernick and John Plunkett), *Proceedings from the NARUC Biennial Regulatory Information Conference*, September 1990.

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