**PECO ENERGY COMPANY**
**STATEMENT NO. 2-R**

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PETITION OF PECO ENERGY COMPANY
FOR APPROVAL OF ITS ACT 129 PHASE III
ENERGY EFFICIENCY AND CONSERVATION PLAN

DOCKET NO. M-2015-2515691

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REBUTTAL TESTIMONY

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WITNESS: NICHOLAS DEDOMINICIS

SUBJECTS: PECO'S RESIDENTIAL, LOW-INCOME AND
MULTI-FAMILY PROGRAMMING,
TECHNOLOGY-BASED PROPOSALS

DATED: JANUARY 29, 2016

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**REBUTTAL TESTIMONY**
**OF**
**NICHOLAS DEDOMINICIS**

## I. INTRODUCTION AND PURPOSE OF TESTIMONY

**1. Q. Please state your full name, professional position and business address.**

A. My name is Nicholas DeDominicis. I am the Manager of Evaluation, Measurement and Verification ("EM&V") for PECO Energy Company ("PECO" or the "Company"). My business address is PECO Energy Company, 2301 Market Street, Philadelphia, Pennsylvania 19103.

**2. Q. Have you previously submitted testimony in this proceeding?**

A. Yes. I submitted direct testimony that is marked as PECO Statement No. 2. My background and qualifications are set forth in that statement.

**3. Q. What is the purpose of your rebuttal testimony?**

A. The purpose of my rebuttal testimony is to respond to the direct testimony of: (1) Geoffrey C. Crandall on behalf of the Office of Consumer Advocate ("OCA") regarding PECO's Residential Energy Efficiency ("EE") Program; (2) Rodger D. Colton on behalf of OCA regarding multi-family EE programming; (3) Mitchell Miller on behalf of the Coalition for Affordable Utility Services and Energy Efficiency in Pennsylvania ("CAUSE-PA") regarding low-income and multi-family programming; (4) Richard H. Counihan on behalf of Nest Labs, Inc. ("Nest") regarding smart thermostats; and (5) Peter J. Cavan on behalf of EnerNOC, Inc. ("EnerNOC") regarding energy intelligence software.

**4. Q. Do you have any general comments concerning the direct testimony served by other parties in this proceeding?**

A. Yes. I have two general comments. First, we were encouraged to see so many supportive comments about the Company's Phase III Energy Efficiency and Conservation Plan ("Phase III Plan" or "Plan") overall.[1] PECO has worked diligently to develop a portfolio of programs that satisfy PECO's Phase III energy and demand savings targets, meet energy savings carve-outs for low-income customers and the governmental, educational and non-profit ("G/E/NP") sector, stay within applicable cost limitations and provide customers with comprehensive savings opportunities. As explained in the direct testimony of Ms. Lentini, the structure of the Phase III Plan, which includes a single comprehensive program for each customer class,[2] will provide PECO with the flexibility necessary to deliver comprehensive and customer-friendly solutions. *See* PECO Statement No. 1, pp. 8-13.

Second, it is important to understand that seemingly discrete proposals for a program change, such as increasing the use of or incentive for a particular technology, will not only impact the particular program but could also jeopardize the cost-effectiveness of the whole portfolio as well as the Company's ability to

[1] *See* OCA Statement No. 1, p. 4 ("PECO's Energy Efficiency and Conservation Plan for Phase III reflects thoughtful consideration of a multitude of energy efficiency and demand reduction strategies."); CAUSE-PA Statement No. 1, p. 8 ("Overall, I support PECO's approach of making direct delivery and audit/direct install programs the focus of their program compliance for the low-income sector."); Nest Statement No. 1, p. 4 ("I am generally supportive of the direction that PECO has taken in its Act 129 Implementation Plan."); EnerNOC Statement No. 1, p. 5 ("I believe the Company has taken great care to craft a plan that includes EE measures that will allow satisfaction of the mandates of phase III and support providing the Company with the tools necessary to accomplish that plan.")

[2] PECO is also proposing separate programs for low-income customer and combined heat and power ("CHP") projects. *See* PECO Statement No. 2, p. 3.

meet its energy and demand savings targets and the energy savings carve-outs within Act 129 budget limitations. In many cases, other parties offer proposals in their direct testimony without any analysis of the budget and savings impacts of those proposals or suggestions regarding how such impacts might be mitigated or addressed through changes in other areas. PECO has taken great care to develop a Plan that is supported by appropriate data and analysis and provides the Company with the necessary flexibility to meet the requirements of Act 129 and the Phase III Implementation Order. Plan changes that are not supported by sufficient analysis or that otherwise restrict PECO's ability to manage its portfolio should be rejected. PECO bears the ultimate responsibility to meet the Phase III targets and must be able to actively manage each program in its Plan towards that end over the five-year Phase III Plan period.

## II. PECO'S RESIDENTIAL EE PROGRAM

**5. Q. OCA Witness Crandall argues that PECO should reduce its reliance on behavioral measures with a one-year measure life and recommends that PECO redesign its residential program with stakeholder input and redeploy 1/2 to 1/3 of behavioral programming dollars to "longer-lasting" measures (OCA Statement No. 1, pp. 4-11). Please respond.**

A. The Company's decision to include a robust behavioral component in the Residential EE Program is reasonable. Behavioral measures are an approved mass market protocol[3] and PECO has successfully obtained savings verified by

[3] 2016 Technical Reference Manual, pp. 13-14, approved by Final Order entered July 8, 2015 at Docket No. M-2015-2469311.

the statewide evaluator ("SWE") from such measures as a part of its Phase II Plan. PECO will use "home energy reports" to implement the Behavioral Solution, and those reports will provide a regularly scheduled opportunity for customer engagement and targeted energy efficiency education customized to the particular profile and anticipated efficiency needs of the recipient. Mr. Crandall is correct that persistence of savings from behavioral measures can be shorter than other measures, and this is reflected in the one-year measure life assigned to behavioral measures. However, some research has found that the longer one participates in a behavioral program, the more persistent the savings are when the customer leaves the program.[4] Under PECO's proposed Behavioral Solution, customers will receive home energy reports for a time period that is greater than one year. PECO is deliberately attempting to lock in these long-term savings by keeping customers enrolled as long as possible. Therefore, PECO believes the use of home energy reports can achieve "standalone" energy efficiency savings and also encourage customer participation in other energy savings opportunities and long-term changes in behavior. Evaluation research will show whether the customers' behaviors are locked in long term. It is at that point that customers could be released from the program and other measures offered.

The proportion of Residential EE Program savings derived from the Behavioral Solution reflects the balancing of a variety of objectives including compliance with savings targets, staying within budget and providing customers with access

[4] *See, e.g.*, Cadmus, 2014/2015. Long-Run Savings and Cost-Effectiveness of Home Energy Report Programs. Written by M. Sami Khawaja, Ph.D. and James Stewart, Ph.D. Web accessible at: http://www.cadmusgroup.com/wp-content/uploads/2014/11/Cadmus_Home_Energy_Reports_Winter2014.pdf

to multiple savings opportunities.[5] As PECO implements the Residential EE Program over the five-year term of the Plan, it will actively manage the Program "measure mix" within the Program budget of approximately $100M to respond to customer preferences and market changes as well as ensure the necessary savings are achieved. Establishing a spending limit for the Behavioral Solution or any of the other individual solutions that comprise the Residential EE Program would restrict the Company's ability to make appropriate adjustments over the course of the Plan.

In sum, PECO's Phase III Plan prioritizes a diversity of energy efficiency measures to help ensure significant opportunities for customer engagement and savings. Behavioral measures are an important element in any modern energy efficiency portfolio, providing a proven, cost-effective way to save energy while helping customers better understand how their choices affect their energy consumption. While their inclusion facilitates the achievement of short-term savings to meet the Phase III targets, the long-term value of behavioral measures is that they educate customers regarding energy consumption, leading to changes in behavior and purchasing choices.

**6. Q. Mr. Crandall proposes that PECO work with the conservation service provider ("CSP") implementing the Behavioral Solution to ensure that the**

[5] PECO notes that its increased reliance on behavioral measures in Phase III as compared to Phase II is consistent with Commission Chairman Gladys M. Brown's statement before the Pennsylvania House of Representatives Consumer Affairs Committee that "Phase III is also designed to increasingly leverage behavioral programs." Prepared Testimony of Gladys M. Brown, Chairman Pennsylvania Public Utility Commission, before the Pennsylvania House of Representatives Consumer Affairs Committee. "*Act 129 Requirement for Electric Distribution Companies to Meet Certain Energy-Efficiency Requirements*" September 1, 2015. page 7. available at http://www.puc.state.pa.us/General/pdf/Testimony/Brown_Act%20129_Testimony_09-01-2015.pdf

**messaging in the home energy reports is personalized and relevant (OCA Statement No. 1, p. 11). Do you agree?**

A. Yes, the Company agrees with OCA that developing personalized and meaningful messaging in the home energy reports is important. PECO intends to work closely with the implementing CSP to leverage key data inputs, such as information derived from a customer's smart meter, to produce relevant and effective messaging.

**7. Q. Mr. Crandall also contends that PECO relies on its implementing CSP to be the sole provider of savings information for Phase II behavioral measures and proposes that a third party evaluator provide a report on savings from these measures to avoid a purported "conflict of interest" (OCA Statement No. 1, pp. 6-7). Please respond.**

A. Mr. Crandall is mistaken about how PECO reports savings from behavioral measures in Phase II. PECO's implementing CSP provides ex ante savings estimates which are then verified by the independent EM&V contractor in accordance with the EM&V plan approved by the SWE. The SWE then validates the gross verified savings from the EM&V contractor – and only those validated savings are counted towards compliance. PECO will use this same process to verify and validate savings from all EE measures (including behavioral) in Phase III.

**8. Q. Mr. Crandall proposes that: (1) starting in Program Year 2018, the Company should redirect funding for standard CFLs to LED screw in**

**lamps; and (2) all residential EE kits should include LEDs instead of CFLs (OCA Statement No. 1, pp. 11-16). Please respond.**

A. PECO is proposing to utilize a suite of lighting technologies in the Residential EE Program, including CFLs and LEDs of various styles and wattages, consistent with the measures and savings provided in the TRM. Including a variety of lighting technologies, with different implementation costs, allows the Company to offer a range of saving opportunities to customers and thereby manage savings and spending to meet compliance obligations. When considering CFLs and LEDs specifically, PECO sees value in retaining both technologies for the full Phase III Plan period. LEDs admittedly generate greater lifetime savings than CFLs, but yield only slightly higher annual savings versus CFLs and do so at significantly higher cost, thus making them much more expensive than CFLs on a first year acquisition cost basis.[6] In addition, PECO's Phase II evaluation shows that, notwithstanding the prospect of meaningful energy savings, a significant percentage of customers are still unwilling to buy LEDs even at price parity with the baseline incandescent bulbs because they simply have not become familiar with the LEDs. PECO wants to maximize the number of customers who participate in the Program, whether they purchase LEDs or CFLs, while they become familiar with newer technologies.

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[6] For example, if you compare a 60W equivalent 13W CFL to a 9W LED, per the 2016 Technical Reference Manual, the CFL will save 25.5 kWh per year and the LED will save 28.8 kWh. Thus the LED saves 13% more than the CFL. However, PECO's forecast CFL average cost for Program Year 8 is roughly $2.44/bulb vs the forecast LED cost of $6.80/bulb. Thus the LED costs roughly 180% more than the CFL for only 13% more savings. The average 60W equivalent baseline halogen bulb is forecast to cost $1.29/bulb. To incent the CFL to an equivalent price as the baseline will cost roughly $1.15/bulb, whereas to incent the LED to the equivalent price will cost $5.51/bulb, or 379% more cost than incenting a CFL. The acquisition cost of the CFL savings would be $45/MWh vs. the LED acquisition cost of $191/MWh, or a 325% premium for the LED.

With that said, and as Mr. Crandall acknowledges in his direct testimony (p. 13), PECO is planning to shift focus over the course of the Phase III period gradually from CFLs to LEDs as the costs of LEDs are expected to decline significantly and become more competitive, on the basis of price, with CFLs. If the costs of LEDs drop faster than forecast, PECO will have the flexibility to shift focus in the Residential EE Program to LED more rapidly as the Program budget allows.

With regard to EE kits, the Company may provide a CFL, LED or both. PECO believes it is appropriate for the Company to retain the flexibility to include a CFL in an EE kit to respond to customer preferences and manage Program spending and savings.

## III. PECO'S LOW-INCOME RESIDENTIAL EE PROGRAM ("LEEP")

**9. Q. CAUSE-PA Witness Miller supports the use of EE kits in LEEP but requests that PECO clarify the anticipated content and delivery of the kits and monitor their deployment and savings (CAUSE-PA Statement No. 1, pp. 11-13). Please respond.**

A. PECO plans to utilize EE kits in a limited and targeted manner, primarily for the purpose of customer education and engagement with PECO's EE programs, and secondarily, to claim energy savings based on third-party verified EM&V.

Kits will be distributed through a low-income targeted pathway coordinated with elementary education and/or adult programs occurring at zoos in the Philadelphia area. Participants in the energy efficiency awareness events will be provided a form to fill out to receive an energy kit they can take home with them. Only customers that qualify as low-income will receive the EE kits. Other customers will receive information on how they can participate in PECO's non-low-income residential EE program. The forms will provide PECO with customer contact information to allow follow up with customers that may qualify for low-income direct install measures.

Kits will include easily installed energy efficient lighting products such as CFLs, LEDs, electroluminescent or LED nightlights, low-flow faucet aerators and showerheads, thermostatic restrictor shower valves, and furnace filter whistles, as well as informational materials about household EE opportunities and PECO's EE programs. Kits will be offered in different packages depending on the needs of the customer to facilitate greater installation of measures. Our EM&V contractor will follow up with customers who receive kits to verify installation rates of the different measures. PECO will only claim savings for the determined percent of measures that are verified to be installed.

**10. Q. Mr. Miller recommends that PECO: (1) modify its overall low-income compliance strategy such that upstream lighting accounts for no more than 20% of low-income savings and the dollars saved are reallocated across other low-income program measures; and (2) eliminate the reliance on upstream lighting to reach the 0-50% of FPL population with high usage (CAUSE-PA Statement No. 1, pp. 17-19). Please respond.**

A. First, I would like to clarify that the Company has not proposed, and is not seeking approval of, particular spending or savings targets for solutions within a program. PECO's Plan is designed to provide it with the flexibility to actively manage funding for measures and solutions within a program to meet savings and budget requirements as well as respond to customer needs. With that in mind, the Company's projected balance of savings from direct installation measures and upstream lighting measures (74% and 26% respectively) is reasonable, will achieve the low-income carve-out, stay within budget, and provide customers with a diverse array of savings opportunities. Mr. Miller has not provided any analysis to show how his proposed reallocation of funding would impact savings, cost-effectiveness, or overall measure availability. For these reasons, his proposal should be rejected.

Regarding the second item, PECO's LEEP is designed to provide comprehensive savings opportunities for all low-income customers, including those incomes at 0-50% of the FPL with high usage. While PECO will be dedicating an additional $1M per year for that customer segment pursuant to the Company's recent settlement of its Three-Year Plan proceeding[7] (the "CAP Settlement"), the Company intends to use those funds to implement the full suite of LEEP measures, including upstream lighting, as projected in the Plan.

**11. Q. Mr. Miller also requests that PECO describe how it will collaborate with the Philadelphia Gas Works ("PGW") and PECO-Gas when performing audits and implementing direct installation measures (CAUSE-PA Statement No. 1, pp. 13-14). Please respond.**

[7] *See PECO Energy Company Universal Service and Energy Conservation Plan for 2013-2015 Submitted in Compliance with 52 Pa.Code §§ 54.74 and 62.4*, Docket No. M-2012-2290911 (Order entered July 8, 2015) (approving the Joint Petition for Settlement).

A. PECO agrees that coordination with other EE programs, such as those provided by PGW, is important to minimize customer confusion and maximize cost-effectiveness of the delivery and implementation of EE measures. PECO will continue discussions with PGW and other entities to find ways to further integrate and coordinate the delivery of efficiency services during Phase III.

**12. Q. OCA Witness Crandall states that PECO has proposed a "Behavioral program element" as a component of LEEP (OCA Statement No. 1, p. 4). Is he correct?**

A. No. PECO's proposed LEEP does not include a behavioral component and therefore the Company will not be counting any savings from behavioral measures towards the low-income carve-out.

## IV. MULTI-FAMILY PROGRAMMING

**13. Q. OCA Witness Colton requests clarification on a number of items related to multi-family programming. Please explain his request and respond.**

A. Mr. Colton asks for clarification regarding: (1) the types and sizes of multi-family buildings that will be served by multi-family programs; (2) how PECO designates a multi-family building as "low-income"; (3) how common areas in individually-metered buildings will be addressed, including how costs and savings will be accounted for in common areas of multi-family buildings; and (4) how multi-family costs and savings will be generally allocated between the residential and commercial and industrial ("C&I") classes.

***Eligibility for Multi-Family Programming***. Mr. Colton correctly observes that PECO's Plan does not define what constitutes a multi-family unit that is eligible for multi-family programming. PECO agrees to adopt the definition of multi-family which was used by the SWE (GDS Associates) for the Phase III Energy Efficiency Potential Study.[8] In particular, PECO's Plan will be revised to indicate that "multi-family" includes all building types with more than one unit when the building is bigger than a duplex (or 1-family attached unit).

***Low-Income Buildings***. PECO's multi-family programming does not involve the designation of buildings as low-income. The Company only counts savings from multi-family buildings towards the low-income carve out if those saving come from an individually-metered dwelling unit of a CAP customer. In master-metered buildings, PECO does not have information about the individuals residing in the building that it could use to confirm their low-income status. However, PECO shares OCA's interest in addressing how a multi-family building may be deemed "low-income" for Act 129 purposes and proposes including this issue as an agenda item in future stakeholder meetings.

***Common Areas.*** PECO's Plan contains targeted measures for common areas in both individually-metered and master-metered multi-family buildings. When a multi-family CSP is completing installations in a multi-family building, it will identify appropriate measures for common areas. In addition, the owner of a

[8] *See* Docket No. M-2014-2424864.

multi-family building could independently participate in the applicable C&I EE program and install measures in a common area.

***Cost Recovery***. Costs and savings related to multi-family measures delivered to residential, individually-metered customers are assigned to the residential class. Costs and savings related to multi-family measures delivered to residents in master-metered buildings are assigned to the applicable C&I class. For measures installed in common areas of multifamily buildings, the costs and savings will be assigned according to the type of meter associated with the particular common area. The Company does not count any savings generated from common area measures towards the low-income carve-out.

**14. Q. Mr. Colton also argues that PECO should not devote a substantial portion of its low-income program budget (which includes multi-family programming) to education and awareness activities unless it can affirm there are measurable and verifiable savings (OCA Statement No. 2, p. 12). Please respond.**

A. PECO's LEEP does not have a distinct education and awareness component and such activities do not comprise a substantial portion of the LEEP budget. The Company does, however, provide education to customers when directly installing measures in a low-income household or providing EE kits. For example, while performing a home audit a CSP may discuss with a customer best practices to manage energy usage and provide some written materials. The Company believes these education and awareness activities are appropriate and can provide meaningful information to customers.

**15. Q. Finally, Mr. Colton asks PECO to explain how it intends to spend the additional $1M per year which, pursuant to the CAP Settlement, will be dedicated to customers high usage customers with incomes at 0-50% of the federal poverty level ("FPL") (OCA Statement No. 2, p. 13). Please respond.**

A. As I explained previously, LEEP is designed to provide comprehensive savings opportunities for all low-income customers, including those incomes at 0-50% of the FPL with high usage. The Company expects the dedicated funds from the CAP Settlement will be used to implement the full suite of LEEP measures, including direct installation measures and lighting measures.

**16. Q. CAUSE-PA Witness Miller makes several proposals related to multi-family programming. Please describe his request and respond.**

A. Mr. Miller makes the following recommendations concerning PECO's multi-family program: (1) PECO's offerings should be coordinated with the measures required by the Pennsylvania Housing Finance Agency ("PHFA") for tax credit eligibility and the Company should market multi-family programs to affordable housing developers; (2) PECO should have a stakeholder meeting co-facilitated by the Housing Alliance of PA and others to hear the needs of the multi-family affordable housing community within the first 6 months of Phase III; and (3) PECO should coordinate the work of the various CSPs implementing multi-family measures because they cut across rate classes. CAUSE-PA Statement No. 1, pp. 14-17.

***Coordination with PHFA Requirements***. PECO's Plan already includes measures addressing most, if not all, of the efficiency-related requirements established by PHFA for tax credit eligibility. *See* Phase III Plan, pp. 164-202.

***Stakeholder Meeting/Marketing to Affordable Housing Developers***. PECO agrees that a stakeholder meeting regarding affordable housing issues would be worthwhile and will use such a meeting to market its programs to affordable housing developers.

***CSP Coordination***. PECO expects that multi-family programming will be implemented by several CSPs, including a CSP dedicated to low-income multi-family programming. The Company will endeavor to coordinate the work of CSPs when such coordination is appropriate.

## V. TECHNOLOGY-BASED PROPOSALS

**17. Q. Nest Witness Counihan proposes that PECO incorporate smart thermostats into its residential and low-income EE programs and provide a $100 retail rebate incentive for smart thermostats (Nest Statement No. 1, p. 5). Please respond.**

A. PECO agrees that smart thermostats may generate energy savings for residential customers and its Plan already provides a residential measure for smart learning thermostats with an incentive range of $15-$200. *See* Phase III Plan, p. 146. For purposes of developing savings and cost estimates for the Residential EE Program, PECO assumed an upstream rebate of $75 and a direct installation rebate of $100. The Company expects that rebates offered at the beginning of the Phase III Plan will be similar to those estimates. Based on verified savings from smart thermostats in the Residential EE Program in the early years of the Plan, PECO may consider incorporating smart thermostats as a measure in LEEP in the later years of Phase III.

The use of incentive ranges for measures is appropriate because it allows PECO to make adjustments over the five-year Plan based on market changes, customer preferences, and the need to comply with savings targets and spending limitations. While Mr. Counihan may prefer special treatment for smart thermostats – I see no reason to treat them differently than other measures in the Company's Plan by assigning them a fixed incentive.

**18. Q. Mr. Counihan also recommends that PECO make a six fold increase in the size of the smart meter thermostat solution within the residential demand response ("DR") program (from 5.4 MW to 30.4 MW) and correspondingly reduce the DR it is seeking through the large C&I DR program (Nest Statement No. 1, pp. 18-19). Please respond.**

A. PECO's portfolio of DR programs was developed to achieve PECO's DR target, stay within spending limitations, and provide each customer class with an opportunity to participate in DR activities. PECO's residential DR program is comprised of three different solutions (Direct Load Control, Smart Thermostat and Behavioral) to provide diverse and balanced participation opportunities. Mr. Counihan's proposal to heavily favor smart thermostats as a residential DR measure would dramatically change the balance of DR opportunities between customer classes and within the residential DR program itself. He has not supported his proposal with any analysis to demonstrate that his recommendations are cost-effective, achieve PECO's DR targets, or stay within the Company's proposed DR budget. For all these reasons, his proposal should be rejected.

**19. Q. EnerNOC Witness Mr. Cavan recommends the use of Energy Intelligence Software ("EIS") to leverage smart meter data and improve customer engagement in EE programs. Please respond.**

A. The energy industry is undergoing a period of rapid and technological change with the wide scale implementation of smart meters and associated EIS services as described by EnerNOC. PECO is planning to continually monitor the opportunities for incorporating approaches that will improve customer engagement and customer satisfaction, and more cost-effectively achieve the goals of its Phase III plan, subject to the spending constraints of Act 129. PECO looks forward to reviewing the CSP proposals for implementation of the proposed portfolio and expects some may include customer engagement software services with features similar to those explained by EnerNOC or other next generation software services.

**20. Q. Both Mr. Counihan and Mr. Cavan recommend that PECO incorporate pilots deploying their respective technologies as part of the Phase III Plan. Please respond.**

A. As explained in my direct testimony (pp. 15-16), the Company has reserved certain funds to investigate new technologies and market engagement strategies that will emerge over the course of the five-year plan period. Earmarking these funds to pilot smart thermostats and EIS is not warranted, particularly because both technologies may already be deployed under the Company's proposed Phase III Plan. The Company believes it is prudent to reserve these funds to address changes arising <u>during</u> implementation of the Phase III Plan.

## VI. CONCLUSION

**21. Q. Does this conclude your rebuttal testimony?**

A. Yes.

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