

**BEFORE THE  
MARYLAND PUBLIC SERVICE COMMISSION**

IN THE MATTER OF THE  
APPLICATION OF POTOMAC  
ELECTRIC POWER COMPANY  
FOR AN ELECTRIC MULTI-YEAR  
PLAN FOR THE DISTRIBUTION OF  
ELECTRIC ENERGY

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CASE NO. 9702

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SURREBUTTAL TESTIMONY

OF

KENJI TAKAHASHI

ON BEHALF OF THE OFFICE OF PEOPLE'S COUNSEL

February 23, 2023

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**SURREBUTTAL TESTIMONY OF  
KENJI TAKAHASHI**

1 **I. INTRODUCTION**

2 **Q. Please state your name and business address.**

3 A. My name is Kenji Takahashi. I am a Principal Associate at Synapse Energy  
4 Economics, Inc. (Synapse) located at 485 Massachusetts Avenue, Suite 3,  
5 Cambridge, MA 02139.

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

7 A. Yes. I submitted direct testimony in this proceeding on December 15, 2023,  
8 on behalf of the Office of People’s Counsel.

9 **Q. What is the purpose of this surrebuttal testimony?**

10 A. The purpose of my surrebuttal testimony is to respond to the rebuttal  
11 testimony of Potomac Electric Power Company (Pepco or the Company)  
12 Witness Donohoo-Vallett, in particular regarding a workforce development  
13 program for building electrification that Pepco proposed to retain and three  
14 other building electrification programs that Pepco voluntarily agreed to  
15 remove from its proposal in this case.

16 **Q. How is this surrebuttal testimony organized?**

17 A. My surrebuttal testimony begins with Section II where I summarize my  
18 primary conclusions concerning Witness Donohoo-Vallett’s rebuttal  
19 testimony, followed by Section III where I address Witness Donohoo-  
20 Vallett’s rebuttal testimony in more detail. In these sections, I address key

1 issues that I identified in the witness's rebuttal testimony, but do not address  
2 every instance of my disagreement with that testimony. Thus, my silence on  
3 any particular issue should not be interpreted as agreement.

4 **Q. Was this testimony prepared by you or under your direction?**

5 A. Yes. My testimony was prepared by me or under my direct supervision and  
6 control.

7 **II. SUMMARY**

8 **Q. Please summarize your conclusions concerning Ms. Donohoo-Vallett's**  
9 **rebuttal testimony.**

10 A. My conclusion concerning the proposed beneficial electrification workforce  
11 development program that Pepco is proposing to retain as discussed in  
12 Witness Donohoo-Vallett's rebuttal testimony is as follows:

13 1. Witness Donohoo-Vallett's explanation about the level of detail in  
14 the description of the proposed beneficial electrification workforce  
15 development program is insufficient. The plan still lacks details about  
16 what specific challenges Maryland faces in advancing building  
17 electrification, what solutions are available to address some of  
18 challenges, and how the proposed workforce development can play a  
19 role in addressing some of the specific challenges.

20 My conclusions concerning three other building electrification  
21 programs—namely the residential beneficial electrification (BE) program,  
22 the residential make-ready (MR) program, and the commercial MR

1 program—that Pepco agreed to remove from its Multi-Year Rate Plan  
2 (“MRP”) filing as discussed in Witness Donohoo-Vallett’s rebuttal  
3 testimony are as follows:

4 1. My conclusion about the cost of the proposed BE and MR programs  
5 has not changed from my direct testimony. The costs per participant  
6 for these programs are still too high. Witness Donohoo-Vallett’s only  
7 reasoning for the high cost estimate is that these programs are new.  
8 Pepco’s high cost estimate cannot be justified solely by the reason  
9 that the programs are new. In addition, the BE program, the largest of  
10 all three proposed programs, is not entirely new as it provides  
11 incentives to heat pumps, which Pepco has been promoting under its  
12 HVAC efficiency program.

13 2. Witness Donohoo-Vallet mischaracterized or misunderstood the  
14 reason why I introduced the program incentive examples from  
15 Massachusetts and New York in my direct testimony. The purpose of  
16 these examples was to support my recommendation for significantly  
17 higher incentives for whole-home heat pumps relative to hybrid heat  
18 pumps with fuel backup heating. My recommendation that whole-  
19 home heat pumps should receive higher incentives has not changed.

20 3. Witness Donohoo-Vallet mischaracterized or misunderstood why I  
21 introduced two examples from Vermont and Colorado in my direct

1 testimony. The purpose of these examples was to support my  
2 recommendation for higher incentives for cold-climate heat pumps.  
3 My recommendation that cold-climate heat pumps should receive  
4 higher incentives has not changed.

5 4. Pepco's proposed incentive-setting strategy does not adequately  
6 reflect the true customer economics of heat pumps or the state's  
7 policy objectives.

8 **Q. Do you have any recommendations for the Commission regarding the**  
9 **proposed beneficial electrification workforce development program?**

10 A. Yes. I recommend that the Commission not approve the proposed beneficial  
11 electrification workforce development program because Pepco has not  
12 justified the proposed program. In the event that Pepco were to conduct a  
13 study or survey of electrification workforce development needs, and this  
14 supported the details of the proposed program and justified the program  
15 funding request, then the Commission could approve the program in a future  
16 regulatory proceeding.

17 **III. RESPONSE TO WITNESS DONOHOO-VALLETT'S REBUTTAL**  
18 **TESTIMONY**

19 **Q. Your direct testimony focused on Pepco's proposed building**  
20 **electrification programs. Has Pepco proposed any modifications to the**  
21 **originally proposed electrification programs? If so, what are they?**

22 A. Yes. Pepco proposed 12 new programs in its original MRP application  
23 including four new customer-side programs related to building

1 electrification: the residential BE program (contained within the Building  
2 Decarbonization Portfolio), the residential make-ready program, the  
3 commercial make-ready program, and the beneficial electrification  
4 workforce development program (each of the latter three programs are  
5 contained within the Planning Efficient Electrification Portfolio). On  
6 November 28, 2023, OPC submitted a motion to strike all programs  
7 proposed in Pepco’s MYP.<sup>1</sup> In response to OPC’s motion, Pepco voluntarily  
8 agreed to remove seven of the twelve proposed programs.<sup>2</sup> Among the  
9 building-electrification-related programs, Pepco agreed to remove all  
10 programs except the beneficial electrification workforce development  
11 program.<sup>3</sup>

12 **Q. Does Witness Donohoo-Vallett have any rebuttal against your finding**  
13 **on the building electrification workforce development program?**

14 A. Yes. In my direct testimony, I critiqued the lack of details in the description  
15 for the beneficial electrification workforce development program. More  
16 specifically, I stated that Pepco’s “plan lacks details about what specific  
17 challenges Maryland faces in advancing building electrification, what  
18 solutions are available to address some of challenges, and how workforce  
19 development can play a role in addressing the challenges.”<sup>4</sup> In response, Ms.

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<sup>1</sup> ML# 306343.

<sup>2</sup> ML# 306913 (Dec. 28, 2023).

<sup>3</sup> Donohoo-Vallet Rebuttal Testimony at 5 – 7.

<sup>4</sup> Takahashi Direct Testimony at 51:1-4.

1 Donohoo-Vallet argues in her rebuttal testimony that “[t]he economic and  
2 workforce gaps this program addresses are specified at 44:2-9 of Company  
3 Witness Schatz’s Direct Testimony.”<sup>5</sup> The referenced text in Witness  
4 Schatz’s direct testimony—which Ms. Donohoo-Vallet has adopted—is as  
5 follows:

6 “As programs accelerate the adoption of electrification technologies  
7 in homes and buildings, new skillsets and jobs will be required to  
8 meet the associated accelerated demand. This is particularly true for  
9 jobs related to electric HVAC installation, because, as mentioned  
10 earlier, tens of millions of households nationwide will need panel  
11 upgrades, which would require that HVAC companies scale up  
12 resources to meet the demand. This program will build workforce  
13 capacity to meet the demands of the market as it transitions,  
14 especially as the electrification programs in the Company’s proposal  
15 serve to accelerate fuel switching.”<sup>6</sup>

16 **Q. Do you agree with Ms. Donohoo-Vallett’s argument?**

17 A. No. The description in Mr. Schatz’s direct testimony that Ms. Donohoo-  
18 Vallet has adopted only provides a high-level summary of the economic and  
19 workforce gaps. It provides no information about Maryland-specific  
20 workforce development needs and no details to support why this program is  
21 necessary in Pepco’s service territory.

22 Mr. Schatz mentions “new skillsets and jobs will be required to meet  
23 the associated accelerated demand.” However, he does not mention what  
24 kinds of new skillsets and jobs will be required. Instead, he just mentions

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<sup>5</sup> Donohoo-Vallet Rebuttal Testimony at 13: 18-19.

<sup>6</sup> Schatz Direct Testimony at: 44:2-9



1 “jobs related to electric HVAC installation” although this is a traditional job.

2 There are many issues that need to be investigated to figure out what kind of

3 new skillsets and jobs will be required to meet the expected demand for heat

4 pumps and other electrification technologies and to develop a new

5 workforce development program. Some of these questions include:

- 6 • Are the conventional practices for HVAC installations  
7 sufficient?
- 8 • Are there any areas in the installation practices that need to be  
9 changed?
- 10 • Are there any issues with the way heat pumps are installed  
11 now?
- 12 • Do the existing HVAC contractors and electricians have  
13 proper knowledge about the latest heat pump technologies  
14 including how to properly size and install them?
- 15 • Are they familiar with the latest technologies and practices to  
16 help avoid expensive panel upgrades?
- 17 • How effectively can firms train or hire new HVAC installers  
18 and electricians?
- 19 • How can Maryland increase the number of well-trained HVAC  
20 installers and electricians substantially to meet the expected  
21 future demand (e.g., internships and apprenticeships)?
- 22 • How can Maryland improve workforce diversity in the HVAC  
23 industry in this clean energy transition?
- 24 • Is there a necessary role for electric utilities in providing a  
25 workforce development program? If so, what is the role?

26 In addition to HVAC installers and electricians, there are also  
27 questions that need to be addressed for other key players such as building

1 operators, facility management technicians, energy auditors, and equipment  
2 distributors as part of the state's workforce development initiatives.

3 Neither Pepco's MRP filing nor Pepco's expert witnesses have identified  
4 any specific problems or barriers that the proposed program will be  
5 addressing. Further, Pepco does not describe what exactly the proposed  
6 program would do besides the list of the program course names provided in  
7 Schedule (DSS)-3. Pepco has not shown how its proposed program is well  
8 tailored to address any specific problems or barriers impeding building  
9 electrification.

10 **Q. Do you have any additional recommendations beyond what you already**  
11 **provided in your Direct Testimony concerning Pepco's workforce**  
12 **development program?**

13 A. Yes. In my direct testimony, I recommended that "Pepco provide more  
14 details about the program including descriptions of proposed courses, as  
15 well as descriptions of specific issues Pepco and other stakeholders are  
16 facing in promoting electrification and how Pepco's proposed program  
17 would help address those issues."<sup>7</sup> To meet this recommendation, Pepco  
18 could: (a) conduct an electrification workforce development needs  
19 assessment; or (b) conduct a survey of publicly available workforce  
20 development needs assessments<sup>8</sup> and/or existing workforce development

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<sup>7</sup> Takahashi Direct Testimony at 62:5-8.

<sup>8</sup> See, e.g., Massachusetts Clean Energy Network *Powering the Future: A Massachusetts Clean Energy Workforce Development Needs Assessment* (July 2023), <https://www.masscec.com/resources/massachusetts-clean-energy-workforce-needs-assessment>; UCLA Luskin Center for Innovation and Inclusive Economics,

1 programs or plans implemented in other jurisdictions.<sup>9</sup> Based on either of  
2 the approaches, Pepco should develop recommendations for a new  
3 electrification workforce development program.

4 Conducting a workforce development needs assessment is a  
5 significant undertaking. This kind of study typically requires conducting  
6 interviews with key stakeholders which could include contractors,  
7 electricians, building operators, training providers, community  
8 organizations, and industry associations. Such a study could also require a  
9 quantitative analysis of employment impacts assuming a clean energy future  
10 scenario (i.e., Maryland's *Climate Solutions Now Act of 2022*). This analysis  
11 will identify the type and scale of specific industries that are expected to  
12 grow. These studies are complex and take several months to complete. Thus,  
13 such studies should ideally be developed in coordination with other utilities  
14 in the state (and jointly funded).

15 **Q. What is your recommendation for the Commission regarding Pepco's**  
16 **funding request for the proposed beneficial electrification workforce**  
17 **development program?**

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*California Building Decarbonization – Workforce Needs and Recommendations* (Nov. 2019),  
[https://innovation.luskin.ucla.edu/wp-content/uploads/2019/11/California\\_Building\\_Decarbonization-Executive\\_Summary-1.pdf](https://innovation.luskin.ucla.edu/wp-content/uploads/2019/11/California_Building_Decarbonization-Executive_Summary-1.pdf)

<sup>9</sup> See, e.g., Pacific Gas & Electric (“PG&E”), “Training and resources for businesses,”  
<https://www.pge.com/en/business-resources/business-education-and-tools.html>; PG&E, “Electrification class catalogue,” <https://pge.docebosaas.com/learn/public/catalog/view/26>; Mass Save, *Three-Year Energy Efficiency Plan – 2022-2024*, Section 2.9.3 and Section 3.8.2 (Nov. 1, 2021), <https://ma-eeac.org/wp-content/uploads/Exhibit-1-Three-Year-Plan-2022-2024-11-1-21-w-App-1.pdf>.

1 A. Pepco has not met the burden of showing that the proposed program with a  
2 budget of approximately \$1.1 million is well designed and a prudent use of  
3 the ratepayers' money. Therefore, I recommend that the Commission reject  
4 the proposed beneficial electrification workforce development program  
5 without prejudice. If in the future, Pepco conducts a study or survey of  
6 electrification workforce development needs that supports the details and  
7 costs of a proposed workforce development program, the Commission could  
8 approve that program in a future proceeding.

9 **Q. Do you have any disagreements in Witness Donohoo-Vallett's rebuttal**  
10 **testimony regarding the other building electrification programs that**  
11 **Pepco agreed to remove from its MRP filing?**

12 A. Yes. I disagree with Witness Donohoo-Vallett's characterization of my  
13 critiques and/or recommendations on Pepco's BE program and MR  
14 programs, in particular program administration, education and customer  
15 outreach costs, and heat pump incentive offerings.

16 **Q. What is Witness Donohoo-Vallett's rebuttal against your critiques or**  
17 **recommendations on the program administration and education and**  
18 **outreach costs?**

19 A. In my direct testimony, I found that the proposed costs per participant for  
20 program administration and customer outreach and education for the BE and  
21 MR programs were too high. This finding was based on my assessment of  
22 the costs of the existing EmPOWER programs.<sup>10</sup> The combined costs of

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<sup>10</sup> Takahashi Direct Testimony at: 52 to 54.

1 program administration and customer education and outreach per participant  
2 for the proposed BE and MR programs were approximately twice as high as  
3 the EmPOWER Maryland programs that I referenced in my direct  
4 testimony. In response, Witness Donohoo-Vallet argues that “per participant  
5 costs are higher for the new programs because they were designed to launch  
6 new programs into the fuel-switching market, which requires intensive  
7 administrative oversight.”<sup>11</sup> She also argues that “[t]he existing EmPOWER  
8 administration costs are lower because the Company has been running those  
9 programs for over a decade and have established operational efficiencies.”<sup>12</sup>

10 **Q. What part of her argument on the proposed program costs do you**  
11 **disagree with?**

12 A. Witness Donohoo-Vallet argues that the costs are high because the proposed  
13 programs are new programs that are launched into the fuel-switching  
14 market. I disagree with this argument. The proposed BE program promotes  
15 the same technology—i.e. heat pumps—that Pepco has already been  
16 promoting under its HVAC efficiency program. The only major difference is  
17 that the BE program is designed to promote heat pumps for the purpose of  
18 switching from fossil-fuel-based heating systems to electric heating systems,  
19 while the traditional HVAC program focuses on providing incentives for  
20 higher efficiency heat pumps relative to standard, less efficient heat pumps.

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<sup>11</sup> Donohoo-Vallet Rebuttal Testimony at 18: 5-7.

<sup>12</sup> Donohoo-Vallet Rebuttal Testimony at 18: 7-9.

1 There should be little difference in administering these two similar types of  
2 programs.

3 Further, Pepco can and should take advantage of the existing  
4 EmPOWER Maryland program infrastructure to offer the proposed BE  
5 program. By leveraging its existing program infrastructure, Pepco can  
6 reduce the administration and customer outreach costs of its proposed  
7 program. Accordingly, Pepco's proposed administration and customer  
8 outreach costs are not justified and too high.

9 The proposed program costs for the MR programs are also too high.  
10 The residential MR program would not require any additional customer  
11 outreach costs because Pepco would be mostly providing incentives to the  
12 customers that install heat pumps under Pepco's proposed BE program or  
13 other equipment incentive programs offered by Pepco.<sup>13</sup> The commercial  
14 MR program may require additional customer education and outreach costs  
15 because Pepco is not proposing a commercial BE program. However,  
16 Pepco's cost estimate per participant for this program is about six times  
17 higher than the EmPOWER Maryland programs. The fact that the  
18 commercial MR program is new does not justify this extremely high cost  
19 estimate. In addition, higher administration costs are not justified for both  
20 MR programs because there is no additional complexity for administering

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<sup>13</sup> Schedule DSS-3 at 1 to 2.

1 the programs (e.g., rebate processing), and Pepco does not provide any  
2 reasoning to support the high administration costs other than that the MR  
3 programs are new.

4 **Q. What is your disagreement regarding heat pump incentive offerings in**  
5 **Witness Donohoo-Vallett's rebuttal testimony?**

6 A. I disagree with Witness Donohoo-Vallett's characterization of my  
7 recommendations for higher incentives for whole-home heat pumps and  
8 cold-climate heat pumps.

9 **Q. Please explain Witness Donohoo-Vallett's mischaracterization of your**  
10 **recommendation for higher incentives for whole-home heat pumps.**

11 A. In my direct testimony, I recommended that "Pepco provide substantially  
12 higher incentive levels for those [whole-home] heat pumps and lower  
13 incentive levels for hybrid heat pumps" "to fully recognize the benefits of  
14 whole-home, electric heat pumps that do not require any fuel backup  
15 heating."<sup>14</sup> I provided examples from the Mass Save program in  
16 Massachusetts and the Clean Heat Program in New York to support my  
17 recommendation.<sup>15</sup> I then recommended that "Pepco design incentives for  
18 whole-home heat pumps twice as large as hybrid heat pumps with fuel  
19 backup heating," based on Mass Save's incentive approach.

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<sup>14</sup> Takahashi Direct Testimony at 46: 2-5.

<sup>15</sup> Takahashi Direct Testimony at 38:3 –39:13.

1           In response, Witness Donohoo-Vallett compared the absolute  
2           incentive amounts offered by Mass Save and my proposed incentive levels  
3           for heat pumps for Pepco (which are lower than Pepco's proposed incentive  
4           levels) and stated that "OPC Witness Takahashi's recommended incentive  
5           levels are less than the incentive amount that Pepco modeled and the level of  
6           incentives that OPC Witness Takahashi references in the benchmark  
7           analysis."

8   **Q.   Please explain your disagreement with Witness Donohoo-Vallett's**  
9   **characterization of your incentive recommendations for whole-home**  
10 **heat pumps.**

11 A.   Witness Donohoo-Vallet misunderstands the reason why I introduced the  
12       program incentive examples from Massachusetts and New York. The  
13       purpose of providing these examples was to support my recommendation  
14       that Pepco should provide higher incentives for whole-home heat pumps  
15       than for hybrid heat pumps with fossil fuel backup heating when designing  
16       heat pump incentive levels.

17           It is not appropriate to compare the absolute incentive amounts in  
18       these examples to my proposed incentives for Pepco or Pepco's proposed  
19       incentives because the situations in these examples are very different from  
20       the situation relevant for Pepco's MRP filing. The examples from  
21       Massachusetts and New York were established well before the Inflation  
22       Reduction Act (IRA) programs were made public and do not include any



1 impact of the rebates from the IRA, while the incentives Pepco proposed for  
2 its programs are adjusted for the expected rebates from the IRA.

3 **Q. Please explain Witness Donohoo-Vallett's characterization of your**  
4 **recommendation for higher incentives for cold-climate heat pumps.**

5 A. In my direct testimony, I recommended that Pepco provide higher incentive  
6 for cold-climate heat pumps to recognize the benefits of such heat pumps to  
7 provide high heating capacities under frigid temperatures and reduce winter  
8 peak load contributions from heat pumps.<sup>16</sup> I used examples from Xcel  
9 Colorado and Burlington Electric Department in Vermont to support this  
10 recommendation.<sup>17</sup> Witness Donohoo-Vallett does not agree with my  
11 recommendation because she claims that the programs offered by these two  
12 jurisdictions do not promote fuel-switching, whose incremental costs are  
13 higher than the incremental costs of heat pumps that do not switch fuels  
14 (e.g., from a gas furnace to a heat pump).<sup>18</sup>

15 **Q. Why do you disagree with Witness Donohoo-Vallett's characterization**  
16 **of your incentive recommendation for cold-climate heat pumps?**

17 A. Again, Ms. Donohoo-Vallet missed the main point of the two examples from  
18 Vermont and Colorado I provided to support my recommendation. I used  
19 those examples to suggest that incremental incentives beyond the level  
20 offered for standard, high efficiency heat pumps would be helpful to

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<sup>16</sup> Takahashi Direct Testimony, at 46: 8-11.

<sup>17</sup> Takahashi Direct Testimony, at 40-41.

<sup>18</sup> Donohoo-Vallet Rebuttal Testimony at 19: 11-13.

1 encourage the installation of cold-climate heat pumps. This issue is distinct  
2 from whether fuel-switching requires higher incentive levels. Regardless of  
3 whether fuel-switching necessitates higher incentive levels, a beneficial  
4 electrification program in Maryland should still provide additional  
5 incentives to encourage customers to install cold-climate heat pumps.

6 **Q. Do you have any broader concerns about Ms. Donohoo-Vallett's**  
7 **responses to your recommendations that encourage customers to switch**  
8 **to whole-home, cold-climate heat pumps?**

9 A. Yes. I am concerned that Pepco's proposed incentive-setting strategy does  
10 not adequately reflect the true customer economics of heat pumps or  
11 Maryland's policy objectives. Whole-home heat pumps need to be sized to  
12 fully meet the *entire* space heating needs at the design temperatures, while  
13 hybrid heat pumps do not need to be sized to meet the full heating loads.  
14 This means that the total costs of whole-home heat pumps are higher than  
15 those of hybrid heat pumps, and therefore the incentives for whole-home  
16 heat pumps should be higher.

17 Further, the state has goals of reducing fossil fuel use from the  
18 buildings and greenhouse gas emissions to net zero by 2045 and has  
19 established a clear policy direction that electrification is the most important  
20 strategy in the building sector to help the state meet its aggressive  
21 greenhouse gas reduction mandates. The state has also expressed a clear  
22 policy interest in mitigating winter peak loads on the electric system.

1           Customer incentives for promoting heating electrification need to  
2 recognize these policy objectives—which means providing higher incentives  
3 to whole-home and cold-climate heat pumps— because such measures are  
4 the most promising combination to achieve the state's policy objectives.  
5 Pepco's proposed incentives for heat pumps do not recognize these  
6 important aspects of heat pumps, do not reflect the full impact of the IRA (in  
7 particular, the federal tax credits available for electrification) on setting the  
8 appropriate incentive levels, and put undue emphasis on the impact of fuel-  
9 switching on administrative and customer education and outreach costs.  
10 Thus, I maintain my original recommendations from my direct testimony.

11 **Q. Does this conclude your testimony?**

12 **A. Yes.**