BEFORE THE

PUBLIC SERVICE COMMISSION OF MARYLAND

IN THE MATTER OF THE APPLICATION OF BALTIMORE GAS AND ELECTRIC COMPANY FOR AN ELECTRIC AND GAS MULTI-YEAR PLAN	)	Case No. 9645

Direct Testimony of

Courtney Lane

On Behalf of

Office of People's Counsel

August 14, 2020

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I. INTRODUCTION AND QUALIFICATIONS

Q. Please state your name, title, and employer.

A. My name is Courtney Lane. I am a Senior Associate at Synapse Energy Economics, located at 485 Massachusetts Avenue, Cambridge, MA 02139.

Q. Please describe Synapse Energy Economics.

A. Synapse Energy Economics is a research and consulting firm specializing in electricity and gas industry regulation, planning, and analysis. Our work covers a range of issues, including economic and technical assessments of demand-side and supply-side energy resources; energy efficiency policies and programs; integrated resource planning; electricity market modeling and assessment; renewable resource technologies and policies; and climate change strategies. Synapse works for a wide range of clients, including state attorneys general, offices of consumer advocates, trade associations, public utility commissions, environmental advocates, the U.S. Environmental Protection Agency (EPA), U.S. Department of Energy (DOE), U.S. Department of Justice, the Federal Trade Commission, and the National Association of Regulatory Utility Commissioners. Synapse has over 30 professional staff with extensive experience in the electricity industry.

Q. Please summarize your professional and educational experience.

A. I have over 15 years of experience in energy policy and regulation. At Synapse, I work on issues related to the assessment of cost-effectiveness tests for distributed energy resources and conduct rate and bill impacts assessments for energy efficiency programs on behalf of electric and natural gas utilities. I also was a contributor to the development

of the National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources. Prior to working at Synapse, I was employed by National Grid. At National Grid I oversaw the benefit-cost models for the company's Rhode Island energy efficiency programs and was a core contributor to the development of the Rhode Island Benefit Cost Test (RI Test). During my employment at National Grid I also served as the Growth Management Lead for New England where I oversaw the development of customer products, services, and business models for Massachusetts and Rhode Island, which included electric vehicle programs. Prior to joining National Grid, I worked on regulatory and state policy issues pertaining to energy conservation, retail competition, net metering, and the Alternative Energy Portfolio Standard for Citizens for Pennsylvania's Future (PennFuture). Prior to that, I worked for Northeast Energy Efficiency Partnerships, Inc. where I promoted energy efficiency throughout the Northeast.

I hold a Master of Arts in Environmental Policy and Planning from Tufts University and a Bachelor of Arts in Environmental Geography from Colgate University. My resume is attached as Exhibit A.

Q. On whose behalf are you testifying in this case?

A. I am testifying on behalf of the Office of People's Counsel (OPC).

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to respond to the benefit-cost analysis (BCA) conducted by Mark Warner on behalf of Baltimore Gas and Electric Company (BGE or the Company) regarding its suite of electric vehicle (EV) program offerings.

Q. Have you previously testified before the Public Service Commission of Maryland (Commission)?

A. No. I have not testified before the Commission, but I presented findings of my assessment of the BCAs conducted by the Maryland utilities as part of Case No. 9619, the Commission's energy storage docket, on behalf of the OPC.

Q. Have you previously submitted testimony in proceedings before other state commissions or agencies?

A. Yes. I have testified under oath and participated in regulatory proceedings before the Rhode Island Public Utilities Commission, the Pennsylvania Public Utility Commission, and the Public Service Commission of the District of Columbia. In Rhode Island I testified on matters pertaining to energy efficiency, system reliability procurement, cost-effectiveness tests, and power sector transformation. In Pennsylvania I testified on matters related to energy efficiency and retail electric markets. In the District of Columbia, I submitted written testimony on multi-year rate plans and performance incentive mechanisms.

Q. What materials did you rely on to develop your testimony?

A. The sources for my testimony and exhibits are the Company's Application and responses to discovery requests, public documents, and my personal knowledge and experience.

Q. Were these exhibits prepared by you or under your direction?

A. Yes. My testimony and the accompanying exhibits were prepared by me or under my direct supervision and control.

II. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q. Please summarize your primary conclusions regarding BGE Witness Warner's BCA.

A. My primary conclusion is that Witness Warner's BCA has several flaws that I will detail further in my testimony. These include:

- The use of the ratepayer impact measure (RIM) test in the assessment of BGE's EV program offerings excludes key costs and benefits attributable to those programs and conflates cost-effectiveness with an assessment of ratepayer impacts.

- Changes in revenues from BGE's EV program offerings, including Company-owned chargers, should not be included as a benefit in any BCA. These are ratepayer impacts and should be assessed separately from cost-effectiveness. The removal of revenue impacts from the "Offering 4: Utility Owned Chargers for Public Use" BCA results in a benefit-cost ratio (BCR) of 0.80.

- Witness Warner's BCA approach does not adhere to the principles of the National Standard Practice Manual for Benefit-Cost Analysis (NSPM) due to the fact it includes the impacts of changes to utility revenues, does not include all applicable costs-and benefits, and does not adequately align with Maryland's policy goals.

Q. Please summarize your recommendations.

A. My primary recommendation is that Witness Warner's BCA should not set precedent for future BCAs of EV programs conducted either prospectively or retrospectively.

I also recommend that the Commission:

1. Require any future BCA of a utility EV program to reflect the full benefits and costs applicable to that program and adhere to the principles of the NSPM.

2. Not permit any future BCA of utility EV offerings to include the impact of changes to utility revenues.

3. Require BGE to provide a justification of the costs related to Company-owned EV chargers as part of its consolidated reconciliation and final reconciliation as proposed in its Multi-Year Plan (MYP) filing. This should include a summary of revenues received from Company-owned chargers, how revenues were returned to customers, and the cost of the program.

4. Require BGE to conduct a BCA for each program offering at the end of the five-year pilot period that corrects for the deficiencies I identify in Witness Warner's BCA and that incorporates my recommendations as described in this testimony. This BCA should be based on actual costs and benefits directly related to the Company's programs during the pilot period.

5. Require BGE to conduct a rate and bill impacts analysis for each customer rate class at the end of the five-year pilot period to assess the overall ratepayer impacts from its portfolio of EV offerings. This analysis should account for actual revenues received from Company-owned chargers, the impact of increased distribution revenues from EV charging due to the Company's programs, and how these revenues were allocated to each customer class.

III. SUMMARY OF WITNESS WARNER'S COST-EFFECTIVENESS ASSESSMENT

Q. Please summarize Witness Warner's BCA approach.

A. Witness Warner conducts BCAs, what he refers to as "merit tests," for seven cases. These cases include a portfolio level BCA that examines the combined impact of the Company's EV programs on BGE ratepayers, two market-wide BCAs that examine the societal impacts of EV growth in Maryland, and four program-specific BCAs to examine the impact of each EV offering on BGE ratepayers. The EV programs examined include: Offering 1: Residential Whole-House Time-of-Use (TOU) Rate; Offering 2: Residential Smart Charging; Offering 3: Multi-Family Charger Solution; and, Offering 4: Utility Owned Chargers for Public Use.

Q. What cost-effectiveness tests are used for each of the seven cases?

A. Based on standard definitions of cost-effectiveness tests, it appears that Witness Warner uses the following:

- *Portfolio level BCA*: Ratepayer Impact Measure (RIM) test, plus the benefit of reduced emission.
- *Market-Wide BCA (Natural and Managed)*: Societal Cost Test (SCT)
- *Individual EV Program Offerings*:
    - *Offering 1: Residential Whole-House TOU Rate* - RIM test
    - *Offering 2: Residential Smart Charging* - RIM test

- *Offering 3: Multi-Family Charger Solution* - RIM test, plus benefit of reduced emissions.

- *Offering 4: Utility Owned Chargers for Public Use* - RIM test, plus benefit of reduced emissions.

Q. What are the results of Witness Warner's BCA?

A. Witness Warner provides results of his BCAs in Figure 1 of his direct testimony which I have recreated below.

Table 1. Witness Warner BCA Summary

	B/C Ratio	Net Benefit (NPV)
Portfolio Level	2.63	$65,554,485
Market-Wide (Natural)	2.12	$4,774,113,349
Market-Wide (Managed)	3.10	$6,145,656,982
Offering 1: Residential Whole-House TOU	N/A	$349,925
Offering 2: Residential Smart L2 Off-Peak	2.95	$906,300
Offering 3: Commercial Multi-Family	1.71	$5,672,114
Offering 4: Public Charging (DCFC & L2)	2.85	$58,626,147

As Table 1 shows, the results of Witness Warner's BCAs show that each case is cost-effective with a BCR of over 1.0.

IV. THE NATIONAL STANDARD PRACTICE MANUAL

Q. Please describe the National Standard Practice Manual and why it is applicable to your testimony.

A. The National Energy Screening Project (NESP) is an organization working to improve cost-effectiveness screening practices for distributed energy resources (DERs)[1]. To date, the NESP has issued two guidance manuals on cost-effectiveness screening: The National Standard Practice Manual for Evaluating the Cost-Effectiveness of Energy Efficiency Resources[2] (NSPM for EE) in 2017, and the recently published National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources[3] (NSPM for DERs) that incorporates and expands upon the guidance contained in the NSPM for EE.

I use the NSPM as a guidepost for my testimony as it provides an "objective, policy- and technology-neutral, and economically sound guidance"[4] for developing a primary DER cost-effectiveness test (or modifying an existing primary test) and has been vetted by a cross-cutting advisory group consisting of regulators, state agencies, utilities, expert consultants, and representatives from the DER industry.

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[1] DERs are defined as energy efficiency (EE); demand response (DR); distributed generation (DG); distributed storage (DS); electric vehicles (EV); and increased electrification of buildings including heating and cooling systems.

[2] National Energy Screening Project (NESP), *National Standard Practice Manual for Evaluating the Cost-Effectiveness of Energy Efficiency Resources* (NSPM for EE), Edition 1, May 2017. Available at: https://www.nationalenergyscreeningproject.org/wp-content/uploads/2017/05/NSPM_May-2017_final.pdf.

[3] NESP, *National Standard Practice Manual for Benefit-Cost Analysis of Distributed Energy Resources* (NSPM for DERs), August 2020. Available at: https://www.nationalenergyscreeningproject.org/wp-content/uploads/2020/08/NSPM-DERs_08-04-2020_Final.pdf.

[4] NSPM for DERs at i.

Q. What are the NSPM fundamental cost-effectiveness principles?

A. The NSPM provides a list of eight principles to assist in the review of an existing cost-effectiveness test and to guide the development of a new primary cost-effectiveness test from the ground up. The eight principles are summarized below:[5]

- *Principle 1 - Treat DERs as a Utility System Resource:* DERs should be compared with other energy resources, including other DERs, using consistent methods and assumptions to avoid bias across resource investment decisions.

- *Principle 2 - Align with Policy Goals*: Jurisdictions invest in or support energy resources to meet a variety of goals and objectives. The primary cost-effectiveness test should therefore reflect this intent by accounting for the jurisdiction's applicable policy goals and objectives.

- *Principle 3 - Ensure Symmetry*: Asymmetrical treatment of benefits and costs associated with a resource can lead to a biased assessment of the resource. To avoid such bias, benefits and costs should be treated symmetrically for any given type of impact.

- *Principle 4 - Account for Relevant, Material Impacts*: Cost-effectiveness tests should include all relevant (according to applicable policy goals), material impacts including those that are difficult to quantify or monetize.

[5] NSPM for DERs at 2-3.

- *Principle 5 - Conduct Forward-Looking, Long-term, Incremental Analyses*: Cost-effectiveness analyses should be forward-looking, long-term, and incremental to what would have occurred absent the DER. This helps ensure that the resource in question is properly compared with alternatives.

- *Principle 6 - Avoid Double-Counting Impacts:* Cost-effectiveness analyses present a risk of double-counting benefits and/or costs. All impacts should therefore be clearly defined and valued to avoid double-counting.

- *Principle 7 - Ensure Transparency*: BCA practices should be transparent, where all relevant assumptions, methodologies, and results are clearly documented and available for stakeholder review and input.

- *Principle 8 - Conduct BCAs Separately from Rate Impact Analyses*: Cost-effectiveness analyses answer fundamentally different questions than rate impact analyses. Cost-effectiveness analyses should therefore be conducted separately from rate impact analyses.

Q. What type of cost-effectiveness test does the NSPM for DERs recommend?

A. The NSPM for DERs recommends the development of a jurisdiction-specific cost-effectiveness test (JST).[6] Unlike traditional cost-effectiveness tests[7], the JST presents a regulatory perspective. This perspective is typically broader than a Utility Cost Test

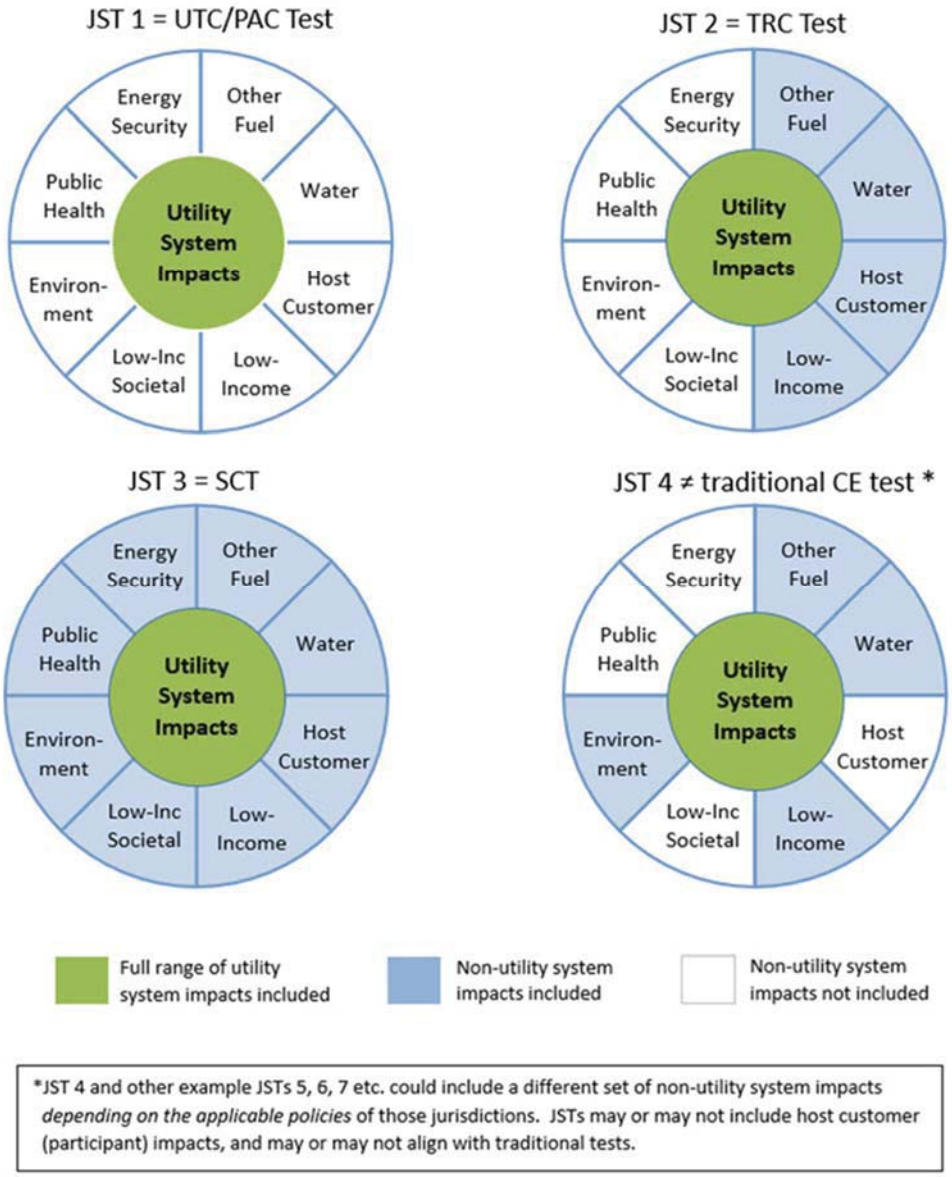
[6] NSPM for DERs at 3-3.

[7] Traditional cost-effectiveness tests include: Utility Cost Test (UCT) also referred to as the Program Administrator Cost (PAC) test, Participant Cost Test (PCT), Ratepayer Impact Measure (RIM) test, Total Resource Cost (TRC) test, and Societal Cost Test (SCT).

(UCT) as it accounts for not only DER impacts to the utility system, but also accounts for applicable state policy goals and objectives.

A JST should account for all applicable utility system costs and benefits and include the appropriate non-utility system benefits and costs that create alignment with state policy goals. It is possible after accounting for all applicable impacts, the resulting JST aligns with a traditional cost-effectiveness test, though it is more likely to be unique to a specific jurisdiction. **Error! Reference source not found.** below provides an illustration of how additional costs and benefits can be added to utility system impacts, and how the choice of those impacts can be similar or different to traditional cost-effectiveness tests, such as the TRC test and the Societal Cost Test (SCT).

Figure 1. NSPM for DERs Example Jurisdiction-Specific Test Relative to Traditional Tests[8]



[8] NSPM for DERs at 3-15.

V. COST-EFFECTIVENESS ANALYSES SHOULD BE SEPARATE FROM RATE IMPACT ANALYSES

Ratepayer Impact Measure Test should not be used for cost-effectiveness

Q. Please explain what cost-effectiveness test Witness Warner uses to assess BGE's EV program offerings?

A. Witness Warner appears to use a RIM test, plus environmental benefits where applicable, to assess BGE's EV programs.

Q. Please explain how you came to this conclusion.

A. A RIM test is an indication of whether rates are likely to increase or decrease as a result of utility investments, and therefore primarily represents the perspective of non-participants (non-EV owners).[9] This is in line with Witness Warner's description of his portfolio level BCA, which "provides a narrow assessment of the net impacts on non-participating ratepayers (i.e., all utility customers that don't own a PEV) for the overall program."[10]

Further, a RIM test includes "the costs and benefits that will affect utility rates, including utility system costs and benefits plus lost revenues".[11] This is consistent with benefits and costs Witness Warner included for the portfolio level BCA and each offering-specific BCA shown in Figure 5 on page 39 of Witness Warner's direct testimony, specifically the inclusion of dilution benefits and receipts from Company-owned EV charger usage.

[9] NSPM for DERs at 3-2.
[10] Direct Testimony of Mark Warner at 27.
[11] NSPM for EE at 110.

However, I describe the cost-effectiveness test used for Program Offerings 3 and 4 as a modified RIM test since Witness Warner also includes environmental benefits that are directly induced by these programs.[12]

Q. What is your concern with the use of the RIM test and the modified RIM test?

A. I have several concerns with the use of the RIM test and modified RIM test for assessing the cost-effectiveness of BGE's EVs programs.

First, as the Commission states in Order No. 88997 regarding the Petition for Implementation of a Statewide Electric Vehicle Portfolio, it "expects the Utilities to include a detailed cost-benefit assessment—through a traditional test or a combination of tests—to substantiate, empirically, all cost expenditures related to EV charging for purposes of cost recovery in any future rate case."[13]

While a RIM test is one of the traditional cost-effectiveness tests that is sometimes used to evaluate energy efficiency resources, it conflates rate impacts with cost-effectiveness which does not provide for a meaningful understanding of either cost-effectiveness or rate impacts.

The NSPM does not recommend the use of the RIM test. The manual states "neither the Participant test nor the RIM test are conceptually consistent with the core principles of cost-effectiveness analysis" and "neither is appropriate as a tool for resource investment

[12] Direct Testimony of Mark Warner at 33 and 39.
[13] Case No. 9478, Order No. 88997 at 44, footnote 170.

choices".[14] The RIM test can be useful for determining whether a DER will increase or decrease rates, but not in assessing cost-effectiveness.[15]

Further the use of the RIM test, even with the inclusion of environmental benefits, excludes key benefits and costs of BGE's EV programs. Most notably, Witness Warner does not include program participant costs and benefits. Participant costs typically include the customer's portion of the equipment and installation cost not covered by the utility incentive. Participant benefits typically include non-energy impacts such as reduced operation and maintenance expenses.

Changes to utility revenues should not be included in cost-effectiveness tests

Q. Please explain how EVs impact utility revenues?

A. When customers switch from a vehicle with an internal combustion engine to an EV, it increases electricity consumption, which in turn leads to an increase in utility distribution revenues. Further, usage of utility owned EV chargers can lead to an increase in revenues.

Q. How do these changes in revenues impact customer electricity rates?

A. To answer this question properly, a calculation would be needed to compare electric utility revenues from EV charging with the costs of serving that EV load. However, in general, if utility revenues increase from EV charging more than the costs to serve that

[14] NSPM for EE at 109.
[15] NSPM for DERs at page A-4.

load it can lead to downward pressure on electric rates for all ratepayers regardless of whether they own an EV.

Q. Does Witness Warner account for changes in utility revenues from BGE's EV programs in the BCA?

A. Yes. Witness Warner accounts for this change in revenues as a "dilution of utility revenues" benefit in the BCA for Program Offerings 3 and 4. Specifically, Witness Warner estimates how unit-costs (dollars/kWh) of utility distribution revenue requirements change as the volume increases due to EV charging. He applies these dilution impacts on a per-kWh basis to the non-PEV charging loads (i.e., electricity use by utility customers that do not own a PEV and who are not participating in the utility PEV Program) to determine utility customer impacts.[16] Witness Warner also includes revenues from utility-owned charging infrastructure, which he describes as "receipts from charger use" as a benefit for Program Offering 4.[17]

Q. What justification does Witness Warner use for counting increased revenues as a benefit?

A. Witness Warner indicates that this approach is similar to what is done in energy efficiency BCAs. In response to a data request on this topic, Mr. Warner states that "inclusion of volume-related considerations are standard practice for EE BCA, especially consideration of "lost revenues" in the Ratepayer Impact Measure (RIM test). Please see widely accepted references for these methodologies, including the CPUC "Standard Practice Manual" (October, 2001), and the National Efficiency Screening Project (NESP)

[16] Direct Testimony of Mark Warner at 29.
[17] Direct Testimony of Mark Warner at 54.

"National Practice Manual" (Spring, 2017). Specifically, on page 111 of the NESP reference, "lost revenues" are listed as a recognized cost for the RIM test, with specific allusion to EE-related volume changes in the description of the RIM test on page 114. Any utility rate-case or filing that uses a RIM test consistent with these standardized protocols would therefore include volume-related impacts in the RIM test."[18]

Q. Is it common for EE programs to use the RIM test and include considerations for lost revenues?

A. No. The most common primary measurement of energy efficiency cost-effectiveness is the TRC, followed closely by the SCT.[19] In fact, the primary test used to assess the cost-effectiveness of Maryland's EmPOWER energy efficiency programs is the TRC.[20] These tests do not account lost revenues or any changes to revenues.

Q. Can you provide an example of how EE programs address changes in revenues?

A. Yes. In Rhode Island, National Grid receives revenue from bidding in EE savings into the ISO New-England Forward Capacity Market (FCM) These revenues go towards offsetting the costs of the EE programs. However, these revenues are not included the BCA for these programs, they are only used in the calculation of the EE program charge. As shown in Table E-1 of National Grid's most recent EE Plan, the revenues reduce the amount of funding needed to be recovered by ratepayers, thereby leading to a lower EE

[18] Response to OPCDR13-21.
[19] National Action Plan for Energy Efficiency (2008). Understanding Cost-Effectiveness of Energy Efficiency Programs: Best Practices, Technical Methods, and Emerging Issues for Policy Makers. Energy and Environmental Economics, Inc. and Regulatory Assistance Project. Available at: www.epa.gov/eeactionplan.
[20] EmPOWER Maryland 2018 Evaluation Report Cost-Effectiveness Results for 2018 Energy Efficiency Programs at page 1.

program charge.[21] The same model is used by utilities in Massachusetts.[22] Further it appears Maryland uses this approach for its EmPOWER programs. Utilities in Maryland earn capacity payments from PJM that is used to offset EE program costs.[23] However, these payments are not listed as a benefit in BGE's BCA for its EmPOWER programs.[24]

Q. Witness Warner cites the NSPM as a justification for using the RIM test and including the benefit of increased revenues, do you agree with this assessment?

A. No. While Witness Warner cites the NSPM for EE, he appears to ignore its key recommendation regarding the use of the RIM test. As indicated previously in my testimony, the NSPM states that the RIM test "is not appropriate for cost-effectiveness analyses".[25] In fact, the NSPM for EE dedicates all of Appendix C to explain why the RIM test should not be used.

Q. Is it appropriate to account for changes in utility revenues in a cost-effectiveness test?

A. No. According to the NSPM for DERs, cost-effectiveness analyses should be conducted separately from rate impact analyses. This is because cost-effectiveness tests and rate impact analyses serve different purposes.

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[21] The Narragansett Electric Co. d/b/a National Grid - 2020 Energy Efficiency Plan (Docket No. 4979), Table E-1, Attachment 5 at page 1. Available at: http://www.ripuc.ri.gov/eventsactions/docket/4979-NGrid-EEPP2020%20(10-15-19).pdf

[22] Massachusetts Joint Statewide Electric and Gas Three-Year Energy Efficiency Plan 2019–2021 (D.P.U. 18-110 through D.P.U. 18-119). Available at: http://ma-eeac.org/plans-updates/.

[23] The EmPOWER Maryland Energy Efficiency Act Report of 2019 at 16.

[24] Case No. 9154 In the Matter of Baltimore Gas and Electric Company's Energy Efficiency, Conservation and Demand Response Programs Pursuant to the EMPOWER Maryland Energy Efficiency Act of 2008. Errata to Baltimore Gas and Electric Company's 2018-2020 EmPOWER Program Filing.

[25] NSPM for EE at 121.

A cost-effectiveness test seeks to determine whether the benefits of a utility investment exceed the costs, and therefore warrants investment on behalf of customers. It does not examine how those benefits and costs are distributed across different customers; it only seeks to assess impacts to customers on average

On the other hand, a rate impact analysis examines whether a utility investment or program will increase or decrease customer rates, and if so by how much? A rate impact analyses will take into account how rate impacts are distributed across customers and can provide important insight into issues of cost-shifting and equity across program participants, non-participants, and customers on average.

The Commission appears to note this distinction in Order No. 88997 where it states it must consider "the appropriate size of an EV charging program, the level of utility involvement, the ratepayer impacts, the cost-effectiveness of the program, the overall benefits to all Maryland ratepayers, and the potential impediments to competition by market participants."[26] In this case, the EV program's impact on ratepayers and its cost-effective are distinct criteria of review.

[26] Case No. 9478, Order No. 88997 at 37.

Q. Should the Commission examine how changes in utility revenues from EVs impact customer rates?

A. Yes. The impacts that EV charging can have on utility revenues and costs can create real impacts on customer rates and bills.[27] While it is not appropriate to include these impacts in cost-effectiveness tests, they should still be examined.

The optimal way to account for these impacts is to conduct a separate long-term rate impact analysis, that also includes a bill impacts and participation analysis.

- Rate impacts indicate the extent to which rates change for all customers due to a utility EV program. This includes upward pressure on rates from program costs, as well as downward pressure on rates from increased revenues and avoided utility system costs.

- Bill impacts indicate the extent to which customer bills might change for those customers that participate in an EV program and how bills will be impacted for non-participating customers.

- Participation impacts indicate the portion of customers that will experience bill changes due to participation in an EV program.

[27] For example, a recent study focused on California found that the increased utility revenues more than they have increased utility costs, leading to downward pressure on electric rates for EV-owners and non-EV owners alike. Synapse Energy Economics. February 2019. Electric Vehicles Are Driving Electric Rates Down. Available at https://www.synapse-energy.com/sites/default/files/EVs-Driving-Rates-Down-8-122.pdf.

When considered together, these analyses can provide valuable insights into how utility programs impact ratepayers and the distribution of those impacts. Such studies have been conducted for EE programs in Vermont and Rhode Island.[28]

VI. THE BCA SHOULD INCLUDE ALL RELEVANT COSTS AND BENEFITS

BCA should align with NSPM Principles

Q. Does Witness Warner's BCA approach and methodology adhere to the NSPM principles?

A. No. Witness Warner's BCA approach does not align with several of the NSPM principles as described below.

- *Principle 2 - Align with Policy Goals*:

This principle indicates that the primary cost-effectiveness should account for a jurisdiction's applicable policy goals and objectives. While Witness Warner accounts for changes in carbon dioxide (CO_2) emissions in the Market-Wide SCT, Offering 3, and Offering 4 BCAs, he does not include emissions impacts that would result from peak load shifting resulting from Program Offerings 1 and 2. CO_2 emissions impacts should be included across all BCAs where applicable as they are part of Maryland's Greenhouse Gas Reduction Act (GGRA)[29] and the

[28] The Vermont rate and bill impacts analysis is available at: https://www.synapse-energy.com/sites/default/files/SynapseReport.2014-04.VT-PSD.VT-EE-Bill-Impacts.13-088.pdf. The Rhode Island analysis is included in Attachment 7 of The Narragansett Electric Co. d/b/a National Grid - 2020 Energy Efficiency Plan (Docket No. 4979). Available at: http://www.ripuc.ri.gov/eventsactions/docket/4979-NGrid-EEPP2020%20(10-15-19).pdf

[29] 2016 Md. Laws, Ch. 011.

Maryland Department of the Environment (MDE) has identified the electrification of Maryland's transportation sector as a key greenhouse gas (GHG) mitigation strategy to meet the GGRA reduction targets.[30]

Further Witness Warner does not appear to account for the increased cost of compliance with Maryland's Renewable Energy Portfolio Standard (RPS) due to increased electricity usage resulting from BGE's EV offerings.

- *Principle 4 - Account for Relevant, Material Impacts*:

This principle indicates that cost-effectiveness tests should include all relevant (according to applicable policy goals), material impacts including those that are difficult to quantify or monetize. As mentioned above, impacts related to CO_2 emissions, RPS compliance, and participant costs and benefits are not accounted for consistently across the BCAs for BGE's EV programs where applicable. This inconsistent approach is also not aligned with Principle 1, which states that consistent methods and assumptions should be used.

- *Principle 8 - Conduct BCAs Separately from Rate Impact Analyses*:

This principle indicates that cost-effectiveness analyses should be conducted separately from rate impact analyses. As indicated above, by using a cost-effectiveness test that accounts for changes to utility revenues, Witness Warner is

[30] Maillog #194882, PC43, Maryland Department of the Environment, Summary of Opening Remarks by Secretary Grumbles, at 1-2 (July 18, 2016)

combining rate impacts with cost-effectiveness which does not provide for a meaningful understanding of either cost-effectiveness or rate impacts.

Q. What do you recommend as the primary-cost effectiveness test for conducting a BCA for BGE's EV offerings at the program and portfolio level?

A. I recommend that BGE's EV offerings be assessed using a JST as recommended by the NSPM. This test would include all utility system impacts, and account for applicable state policy goals as articulated in legislation, Commission Orders, regulations, guidelines, and other policy directives. For the purpose of this testimony, I will refer to this JST as the Maryland Cost-Effectiveness Test (MD Test).

Q. What costs and benefits would be included in the MD Test?

A. In accordance with Principle 1 of the NSPM, the MD Test should align with existing cost-effectiveness tests used for other DERs to the extent possible. Therefore, where applicable, the benefits and costs used to assess Maryland's EmPOWER energy efficiency programs should be included.

Maryland's EmPOWER energy efficiency programs utilize the TRC test as the primary cost-effectiveness test and the SCT as the other key test for evaluating programs.[31] This indicates that the MD Test should, at a minimum, account for the net present value of financial costs and benefits to the utility system and program participants.[32] Then, in accordance with Principle 2 of the NSPM, the MD test should account for environmental

[31] EmPOWER Maryland 2018 Evaluation Report Cost-Effectiveness Results for 2018 Energy Efficiency Programs at page 1.
[32] Id.

impacts related to changes in CO_2 emissions and impacts to RPS compliance costs. I provide a comprehensive list of the applicable costs and benefits in Table 2 in Section **Error! Reference source not found.** later in my testimony.

Q. Witness Warner provides multiple perspectives on the cost-effectiveness of BGE's EV programs. Do you agree with this method?

A. No. While I do not take issue with the fact that multiple perspectives can be appropriate to enhance one's overall understanding of EV program impacts, Witness Warner's approach is flawed.

Witness Warner conducts "merit tests that quantify the net benefit-cost ratio from a variety of perspectives, including a portfolio level view, a market-wide societal cost test, and detailed merit tests customized for each utility offering depending on how each program directly impacts the market"[33]

However, Witness Warner does not examine the same case (i.e, market-wide, program-offering, total portfolio) using various cost-effectiveness tests. Instead, he applies a different cost-effectiveness test, with differing types of benefits and costs to each case. This does little to enhance the understanding of BGE's EV program impacts. It is far more common to see several types of cost-effectiveness tests conducted for the same case. For example, such an approach was used by BGE in its 2018-2020 EmPOWER MD

[33] Direct Testimony of Mark Warner at 3.

Program Filing, where programs were assessed using the TRC test as the primary test, but results were also shown using the UCT, PCT, RIM, and SCT.[34]

Taking into account the Commission's comment in Order 88997 that "a combination of tests may yield more successful results than any single approach"[35], I recommend that the MD Test described above be used as the primary cost-effectiveness test to assess BGE's EV offerings at the program and portfolio level. Then if further tests are warranted to provide additional details, those tests should also be applied at the program and portfolio level contestant to what is done for the EmPOWER programs.

VII. RECOMMENDED MODIFICATIONS TO WITNESS WARNER'S BCA

Q. Based on your review of Witness Warner's BCA, please summarize your key findings.

A. Based on my review of Witness Warner's approach, I have identified several deficiencies in each of his BCAs.

Market-Wide SCT ("Natural" and "Managed")

Q. Please describe the deficiencies found in the Market-Wide SCT.

A. A key issue with the Market-Wide SCT, both for the "natural" and "managed" case, is that it is cited to support the Company's case for cost-recovery of its EV program portfolio. BGE Witness Case states that based on "a market-wide Societal Cost Test that considers all costs and benefits, benefits exceed costs by a factor of 3.10. BGE

[34] Baltimore Gas and Electric Company 2018-2020 EmPOWER MD Program Filing (Case No. 9154).
[35] Case No. 9478, Order No. 88997 at 43.

respectfully requests that the Commission approve recovery."[36] However, these Market-Wide BCAs include costs and benefits that are not directly related to BGE's EV programs. While a market-wide BCA can be beneficial in determining whether a jurisdiction should implement policies and initiatives that support investment in EVs by assessing if the state would be better off with or without them, such a test should not be used to justify cost-recovery of a specific existing utility program.

A second issue with using the results of these BCAs to justify the cost-recovery of BGE's EV programs is the fact that the baseline for this BCA assumes no growth in EV adoption. As Witness Warner indicates, these "BCA calculations consider the total number of vehicles on the road (market-wide, within the BGE territory), and compare that "EV adoption case" with the baseline scenario of no EVs on the road."[37] It is not accurate to assume there will be no growth in EVs absent the BGE program or other market factors. As Witness Warner indicates, "even if there are no utility programs, some level of EV adoption would still happen."[38] If the baseline is inaccurate, the net benefits and costs will be inaccurate.

Lastly, it is not appropriate to include changes in utility revenues as part of an SCT, and for the reasons provided earlier in this testimony this benefit should not be included in any BCA.

[36] Direct Testimony of Mark D. Case, at List of Issues and Major Conclusions.
[37] BGE Response to OPCDR13-16(c).
[38] BGE Response to OPCDR13-16(a).

Q. What are your recommended modifications to Witness Warner's Market-Wide SCT?

A. I recommend that changes in utility revenues, what Witness Warner refers to as dilution benefits, not be included, and a more accurate baseline be developed to account for natural growth in EVs. I also recommend that the results of these BCAs not be considered by the Commission in its review of the cost-effectiveness of BGE's EV programs. As currently presented by Witness Warner, these BCAs are only appropriate for comparing the difference between the "natural" and "managed" BCAs to assess the value of BGE's programs that promote a shift in EV charging from peak to off-peak times.[39]

Offering-Specific BCAs

Q. Please describe the deficiencies found in the BCA for Offering 1, the Residential "Whole House" TOU Rate.

A. I find two key deficiencies in the BCA for Offering 1.

1. Program administration costs should be included. While I agree that there are no program costs related to equipment or rate incentives, there are costs related to the marketing, administration, and evaluation of this offering that should be included. In the Joint Petition to the Commission in the EV docket, BGE identifies a non-incentive budget for its residential sub-portfolio (which includes Offering 1) that includes program management, networking fees, education and customer outreach, and evaluation,

[39] Direct Testimony of Mark Warner at 4.

measurement and verification costs.[40] Part of this overall budget should be allocated to Offering 1 and included as a cost within the BCA.

2. Full impacts of peak load shifting should be included. Witness Warner includes benefits related to moving residential vehicle charging load from on-peak to off-peak period but does not account for the associated changes in electric sector emissions. Load shifting from on-peak to off-peak periods can result in a decrease of polluting emissions from the power sector that can also create health impacts. The exact impact will depend on the relative emissions rates of the power plants that are on the margin at the time of off-peak charging versus the time of on-peak charging. These impacts should be included.

Q. Please describe the deficiencies found in the BCA for Offering 2, the Residential Smart Charging Program?

A. I find two key deficiencies in the BCA for Offering 2.

1. Participant impacts should be included. As explained in prior sections of my testimony, to adhere to the principles of the NSPM, participant (also referred to as host customer) impacts should be included. Participants in this program will experience a cost. BGE's incentives as proposed would only cover "50% of the cost of the charging equipment and the cost of installation, up to $300."[41] Therefore, the participant's share of the EV charger

[40] Petition for Implementation of a Statewide Electric Vehicle Portfolio at 83.
[41] Case No. 9478, Post-Order Compliance Filing of Baltimore Gas and Electric Company, Delmarva Power & Light Company, and Potomac Electric Power Company Regarding the Implementation of Approved Electric Vehicle Charging Program Offerings, at 3.

equipment and installation costs net of the utility incentive should be included as a cost in this BCA. Further, if there are quantifiable participant non-energy impacts from this program, those should also be included. At a minimum, these impacts should be discussed qualitatively.

2. Full impacts of peak load shifting should be included. Similar to Offering 1, Witness Warner includes benefits related to moving residential vehicle charging load from on-peak to off-peak periods but does not account for the associated changes in electric sector emissions. These impacts should be included as described above for Offering 1.

Q. Please describe the deficiencies found in the BCA for Offering 3, the MUD Charger Solution?

A. I find six key deficiencies in the BCA for Offering 3.

1. Participant impacts should be included. Similar to Offering 2, participant costs should be included in this BCA. BGE indicates if will rebate "50% of the total cost of EV chargers and installation up to $5,000 for L2s and $15,000 for DCFC, with a maximum rebate of $25,000 per eligible site" as part of this program offering.[42] The participant share of the EV charger equipment and installation costs net of the utility incentive should be included as a cost in this BCA. Further, if there are quantifiable participant non-energy impacts from this program, those should also be included. At a minimum, these impacts should be discussed qualitatively.

[42] Case No. 9478, Post-Order Compliance Filing of Baltimore Gas and Electric Company, Delmarva Power & Light Company, and Potomac Electric Power Company Regarding the Implementation of Approved Electric Vehicle Charging Program Offerings, at 15.

2. Dilution benefits (revenue impacts) should not be included. For reasons discussed previously in my testimony, revenue impacts, what Witness Warner describes as dilution benefits, should not be included in this BCA.

3. The benefit of Wholesale Loadshaping should not be included. Witness Warner includes a benefit called "wholesale loadshaping" in his BCA for Offering 3. The rationale for this benefit is that "PEV charging, especially if done during off-peak times, changes the shape of the aggregate load curve. This modified load curve results in a change in the average wholesale cost of electricity since more electricity is purchased during lower-cost, off-peak times."[43] However, it is not clear that Offering 3, contains a component to encourage off-peak charging. It therefore does not appear appropriate to include this value as a benefit in this BCA.

4. Generation costs should be included. While Witness Warner includes the impacts of increased capacity and transmission costs, he does not appear to include increased generation costs. The EV chargers incentivized by this program will increase electricity usage and electricity generation. This increased cost should be included in the BCA.

5. RPS compliance costs should be included. The increase in electricity load due to new EV chargers incentivized by this program will increase the quantity of renewable energy or RECs needed to meet Maryland's RPS. This increased costs should be included in this BCA.

[43] Direct Testimony of Mark Warner at 11.

6. The impact on wholesale markets should be included. The increase in electricity load from the chargers incentivized by this program will increase PJM wholesale market clearing prices. This impact should be included as a cost in this BCA.

Q. Please describe the deficiencies found in the BCA for Offering 4, the Utility-Owned Public Charging Program?

A. I find five key deficiencies in the BCA for Offering 4.

1. Receipts (revenues) from BGE-owned EV chargers should not be included as a benefit. For reasons discussed previously in my testimony, revenues from utility-owned chargers (what Witness Warner calls "receipts") should not be counted as a benefit. This impact is more appropriate for inclusion in a rate and bill impacts assessment that should be conducted separate from a cost-effectiveness test according to the principle 8 of the NSPM.

2. Dilution benefits (revenue impacts) should not be included. For reasons discussed previously in my testimony, dilution benefits should not be included in this BCA.

3. The benefit of Wholesale Loadshaping should not be included. Similar to my findings for Offering 3, "wholesale loadshaping" should not be included as a benefit due to the fact it is not clear that Offering 4 will have an impact on shifting EV charging to lower during lower-cost, off-peak times.

4. RPS compliance costs should be included. While Witness Warner does appear to include increased generation costs from this program (listed as Utility OpEx in the BCA), he does not account for the increase in RPS requirements from this increase in electricity

usage. The increase in electricity load due to new EV chargers incentivized by this program will increase the quantity of renewable energy or RECs needed to meet Maryland's RPS. This increased cost should be included in this BCA.

5. The impact on wholesale markets should be included. The increase in electricity load from the chargers incentivized by this program will increase PJM wholesale market clearing prices. This impact should be included as a cost in this BCA.

Q. Based on these findings, what benefits and costs do you recommend for inclusion in the BCA for program-specific offerings?

A. In Table 2 below I revise Witness Warner's Figure 5 on page 39 of his Direct Testimony to show the benefits and costs that should be included in the MD Test for review of BGE's EV program offerings.

Table 2. Applicable benefits and costs for MD Test

Merit Test	Impact	Cost or Benefit
Offering 1: Residential Whole-house TOU rate		
Avoided peaking costs (As Originally included by Witness Warner: includes Reduced Capacity Costs and Transmission Costs)	Utility System	Benefit
Emissions Impact from Load Shifting (CO_2, NOx)	Societal	Likely a Benefit
Public Health Impacts from Load Shifting	Societal	Likely a Benefit
Program Administration Costs (programs share of marketing, evaluation, and labor costs)	Utility System	Cost
Offering 2: Residential Smart Charging		
Avoided peaking costs (As Originally included by Witness Warner: includes Reduced Capacity Costs and Transmission)	Utility System	Benefit
Emissions Impact from Load Shifting (CO_2, NOx)	Societal	Likely a Benefit
Public Health Impacts from Load Shifting	Societal	Likely a Benefit
Program Administration Costs (programs share of marketing, evaluation, and labor costs)	Utility System	Cost
Program costs (equipment/installation rebate)	Utility System	Cost
Rate Incentive (off peak, off-bill)	Utility System	Cost
Participant (host customer) costs (participant share of equipment/installation costs)	Participant	Cost
Participant (host customer) non-energy impacts	Participant	Benefit or Cost

Offering 3: Multi-Family Charger Solution		
Costs of increased load at peak time (As originally included by Witness Warner: includes Capacity Costs and Transmission Costs)	Utility System	Cost
Wholesale Market Price Effect	Utility System	Cost
Energy Generation	Utility System	Cost
RPS Compliance Costs	Utility System	Cost
Emissions reductions (CO_2, SOx, NOx) should be net accounting for decrease in gasoline usage and increase in electricity usage	Society	Benefit
Program costs (equipment/installation rebate)	Utility System	Cost
Rate incentive (demand charge offset)	Utility System	Cost
Participant (host customer) cost (participant share of equipment/installation costs)	Participant	Cost
Participant (host customer) non-energy impacts	Participant	Benefit or Cost
Offering 4: Utility Owned Chargers for Public Use		
Costs of increased load at peak time (As originally included by Witness Warner: includes Capacity Costs and Transmission Costs)	Utility System	Cost
Wholesale Market Price Effect	Utility System	Cost
Energy Generation	Utility System	Cost
RPS Compliance Costs	Utility System	Cost
Emissions reductions (CO_2, SOx, NOx) should be net accounting for decrease in gasoline usage and increase in electricity usage	Society	Benefit
Program costs (equipment/installation rebate)	Utility System	Cost

Q. How would Witness Warner's BCA results change due to the adoption of these recommended changes?

A. I do not have sufficient information to create revised BCAs for each program offering using benefits and costs included in Table 2. However, given my recommendations to Offering 4: Utility Owned Chargers for Public Use, it is likely this program will not be cost-effective.

Q. Please explain how you came to the conclusion that Offering 4 will no longer be cost-effective?

A. This conclusion is primarily driven by my recommendation to exclude benefits from changes in utility revenues. This would remove both the dilution benefit and the benefit

of receipts from Company-owned EV chargers. When these benefits are removed, the BCR for this program is reduced from 2.85 down to 0.80 and is no longer cost-effective. In addition, this does not yet account for energy generation impacts, RPS impacts, and wholesale market impacts that may reduce the BCR further.

Q. What is your recommendation for Offering 4 given it is no longer cost-effective?

A. Given the fact that this is a pilot program and has already been approved by the Commission, it is still reasonable that BGE is allowed cost-recovery for this offering within this MYP. However, I recommend that the Commission require BGE to complete the following:

1. Provide a justification of program costs as part of its consolidated reconciliation and final reconciliation as proposed in its MYP filing. This should include a summary of revenues received from Company-owned chargers, how revenues were returned to customers, and the cost of the program.

2. Conduct a BCA at the end of the five-year pilot period that corrects for the deficiencies in the current analysis and incorporates my recommendations described above. This BCA should be based on actual costs and benefits directly related to Company-owned chargers during the pilot.

3. Conduct a rate and bill impacts analysis. This is particularly important given the uncertainty surrounding revenues from Company-owned chargers. For instance, BGE reported losses for all Company-owned public charging sites as part of its Semi-Annual Progress Report to the Commission. For each site, the charging station revenue was less

than the charging station bill.[44] This is in contrast to the revenues BGE claims in its MYP and Witness Warner includes in his BCA. It will be important to assess how the actual revenues and ratepayer impacts compare to these projections at the conclusion of the pilot.

Q. What is your recommendation for Offerings 1-3?

A. Similar to my recommendation for Offering 4, it is reasonable to allow BGE to receive cost recovery within this MYP for Offerings 1-3.

However, like my recommendation for Offering 4, I recommend that the Commission require a revised BCA at the end of the five-year pilot period that corrects for the deficiencies in the current BCA and incorporates my recommendations. If warranted, a separated rate and bill impacts analysis should also be conducted at the conclusion of these programs.

Q. Does this conclude your testimony?

A. Yes, it does.

[44] Case No. 9478, Semi-Annual Progress Report of Baltimore Gas and Electric Company, Delmarva Power & Light Company, and Potomac Electric Power Company Regarding the Implementation of Approved Electric Vehicle Charging Program Offerings, August 3, 2020, at Appendix J.

Courtney Lane, Senior Associate

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PROFESSIONAL EXPERIENCE

Synapse Energy Economics, Inc., Cambridge, MA. *Senior Associate,* November 2019 – Present.

Provides consulting and researching services on a wide range of issues related to the electric industry including performance-based regulation, benefit-cost assessment, rate and bill impacts, and wholesale electric retail markets. Develops expert witness testimony in public utility commission proceedings.

National Grid, Waltham, MA. *Growth Management Lead*, *New England,* May 2019 – November 2019, *Lead Analyst for Rhode Island Policy and Evaluation,* June 2013 – April 2019.

- Portfolio management of product verticals including energy efficiency, demand response, solar, storage, distributed gas resources, and electric transportation, to optimize growth and customer offerings.
- Strategy lead for the Performance Incentive Mechanisms (PIMs) working group.
- Worked with internal and external stakeholders and led the development of National Grid's Annual and Three-Year Energy Efficiency Plans and System Reliability Procurement Plans for the state of Rhode Island.
- Represented energy efficiency and demand response within the company at various Rhode Island grid modernization proceedings.
- Led the Rhode Island Energy Efficiency Collaborative; a group focused on reaching consensuses regarding energy efficiency plans and policy issues for demand-side resources in Rhode Island.
- Managed evaluations of National Grid's residential energy efficiency programs in Rhode Island, and benefit-cost models to screen energy efficiency measures.

Citizens for Pennsylvania's Future, Philadelphia, PA. *Senior Energy Policy Analyst*, 2005–2013.

- Played a vital role in several legislative victories in Pennsylvania, including passage of energy conservation legislation that requires utilities to reduce overall and peak demand for electricity (2009); passage of the $650 million Alternative Energy Investment Act (2008); and important amendments to the Alternative Energy Portfolio Standards law vital to the development of solar energy in Pennsylvania (2007).
- Performed market research and industry investigation on emerging energy resources including wind, solar, energy efficiency and demand response.
- Planned, facilitated and participated in wind energy advocates training meetings, annual partners retreat with members of wind and solar companies, and the PennFuture annual clean energy conference.

Northeast Energy Efficiency Partnerships, Inc., Lexington, MA. *Research and Policy Analyst,* 2004–2005.

- Drafted comments and testimony on various state regulatory and legislative actions pertaining to energy efficiency.
- Tracked energy efficiency initiatives set forth in various state climate change action plans, and federal and state energy regulatory developments and requirements.
- Participated in Regional Greenhouse Gas Initiative (RGGI) stakeholder meetings.
- Analyzed cost-effectiveness of various initiatives within the organization.

Massachusetts Executive Office of Environmental Affairs, Boston, MA. *Field Projects Extern,* 2003.

- Worked for the Director of Water and Watersheds at the EOEA, examining the risks and benefits of different groundwater recharge techniques and policies throughout the U.S.
- Presented a final report to both Sea Change and the EOEA with findings and policy recommendations for the state.

EnviroBusiness, Inc., Cambridge, MA. *Environmental Scientist,* July 2000 – May 2001

- Conducted pre-acquisition assessments/due diligence assignments for properties throughout New England. Environmental assessments included an analysis of historic properties, wetlands, endangered species habitat, floodplains, and other areas of environmental concern and the possible impacts of cellular installations on these sensitive areas.
- Prepared and managed NEPA reviews and Environmental Assessments for telecommunications sites.

SKILLS

Software: SPSS, Arcview GIS, Access, Dreamweaver, Front Page, Microsoft Excel, Word, Power Point

EDUCATION

Tufts University, Medford, MA
Master of Arts; Environmental Policy and Planning, 2004.

Colgate University, Hamilton, NY
Bachelor of Arts; Environmental Geography, 2000, *cum laude.*

TESTIMONY

Public Service Commission of the District of Columbia (Formal Case No. 1156): Direct Testimony of Courtney Lane regarding the Application of Potomac Electric Power Company for Authority to Implement a Multiyear Rate Plan for Electric Distribution Service in the District of Columbia. On behalf of the District of Columbia Government. March 6, 2020.

Rhode Island Public Utilities Commission (Docket No. 4888): Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2019 Energy Efficiency Program (EEP). On behalf of National Grid. December 11, 2018.

Rhode Island Public Utilities Commission (Docket No. 4889): Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2019 System Reliability Procurement Report (SRP). On behalf of National Grid. December 10, 2018.

Rhode Island Public Utilities Commission (Docket No. 4755): Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2018 Energy Efficiency Program (EEP). On behalf of National Grid. December 13, 2017.

Rhode Island Public Utilities Commission (Docket No. 4684): Oral testimony of Courtney Lane regarding the RI Energy Efficiency and Resource Management Council (EERMC) Proposed Energy Efficiency Savings Targets for National Grid's Energy Efficiency and System Reliability Procurement for the Period 2018-2020 Pursuant to §39-1-27.7. On behalf of National Grid. March 7, 2017.

Rhode Island Public Utilities Commission (Docket No. 4684): Oral testimony of Courtney Lane regarding National Grid's 2018-2020 Energy Efficiency and System Reliability Procurement Plan. On behalf of National Grid. October 25, 2017.

Rhode Island Public Utilities Commission (Docket No. 4654): Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2017 Energy Efficiency Program Plan (EEPP) for Electric & Gas. On behalf of National Grid. December 8, 2016.

Rhode Island Public Utilities Commission (Docket No. 4580): Oral testimony of Courtney Lane regarding the Narragansett Electric Co. d/b/a National Grid - 2016 Energy Efficiency Program Plan (EEPP) for Electric & Gas. On behalf of National Grid. December 2, 2015.

Pennsylvania Public Utility Commission (Docket No. P-2012-2320369): Direct testimony of Courtney Lane regarding the Petition of PPL Electric Utilities Corporation for an Evidentiary Hearing on the Energy Efficiency Benchmarks Established for the Period June 1, 2013 through May 31, 2016. On behalf of PennFuture. October, 19, 2012.

Pennsylvania Public Utility Commission (Docket No. P-2012-2320334): Direct testimony of Courtney Lane regarding the Petition of PECO Energy for an Evidentiary Hearing on the Energy Efficiency Benchmarks Established for the Period June 1, 2013 through May 31, 2016. On behalf of PennFuture. September 20, 2012.

Pennsylvania Public Utility Commission (Docket No. I-2011-2237952): Oral testimony of Courtney Lane regarding the Commission's Investigation of Pennsylvania's Retail Electricity Markets. On behalf of PennFuture. March 21, 2012.

Committee on the Environment Council of the City of Philadelphia (Bill No. 110829): Oral testimony of Courtney Lane regarding building permitting fees for solar energy projects. On behalf of PennFuture. December 5, 2011.

Pennsylvania Public Utility Commission (Docket No. M-00061984): Oral testimony of Courtney Lane regarding the En Banc Hearing on Alternative Energy, Energy Conservation, and Demand Side Response. On behalf of PennFuture. November 19, 2008.

PRESENTATIONS

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Lane, C., A. Flanders. 2017. "National Grid Rhode Island: Piloting Wireless Alternatives: Forging a Successful Program in Difficult Circumstances." Presentation at the 35th Annual Peak Load Management Association (PLMA) Conference, Nashville, TN, April 4, 2017.

Lane, C. 2013. "Regional Renewable Energy Policy Update." Presentation at the Globalcon Conference, Philadelphia, PA, March 6, 2013.

Lane, C. 2012. "Act 129 and Beyond." Presentation at the ACI Mid-Atlantic Home Performance Conference, October 1, 2012.

Lane, C. 2012. "Act 129: Taking Energy Efficiency to the Next Level." Presentation at the Energypath Conference, June 28, 2012.

Lane, C. 2011. "Pennsylvania's Model Wind Ordinance." Presentation at Harvesting Wind Energy on the Delmarva Peninsula, September 14, 2011.

Lane, C. 2011. "Electric Retail Competition and the AEPS." Presentation at the Villanova Law Forum, November 4, 2011.

Lane, C. 2009. "Act 129: Growing the Energy Conservation Market." Presentation at the Western Chester County Chamber of Commerce, March 25, 2009.

PUBLICATIONS

Chang, M., J. Frost, C. Lane, S. Letendre, PhD. 2020. *The Fixed Resource Requirement Alternative to PJM's Capacity Market: A Guide for State Decision-Making*. Synapse Energy Economics for the State Energy & Environmental Impact Center at the NYU School of Law.

Resume updated June 2020

Application of Baltimore Gas and Electric Company
for an Electric and Gas Multi-Year Plan

Case No. 9645

Data Responses referenced in the Direct Testimony of
Courtney Lane

BGE Response to OPC DR 13-16
BGE Response to OPC DR 13-21

August 14, 2020

Case No. 9645
Baltimore Gas and Electric Co.
Response to OPC Data Request 13
Request Received: 06/30/2020
Response Date: 07/15/2020
Sponsor: Mark Warner

Item No.: OPCDR13-16

Referring to page 10 of Witness Warner's Direct Testimony, which indicates the use of a "baseline with no PEV use growth", please answer the following:

a. Is it the opinion of Witness Warner that without BGE's EV programs, there would be no PEV use growth in BGE's service territory?
b. Is it the opinion of Witness Warner that without BGE's EV programs, there would be no PEV use growth in Maryland?
c. Please list each BCA calculation and merit test that assumes a baseline of no PEV use growth.

RESPONSE:

a) No. If there are no utility programs, some level of EV adoption would still happen. But without the utility programs, Mr. Warner believes that adoption will happen at a slower rate (especially due to the reduced level of public charging, which has a dominant impact on consumer adoption barriers), which in turn makes attainment of Maryland's EV goals less likely.

b) No. Please see the response to subpart (a) above.

c) For the two Societal Cost Test ("SCT") calculations (natural and managed), the BCA calculations consider the total number of vehicles on the road (market-wide, within the BGE territory), and compare that "EV adoption case" with the baseline scenario of no EVs on the road. That is why Mr. Warner described the SCT as quantification of the net benefit of electrification overall – including the influence of the utility programs, but other market development factors as well. For the offer-specific tests, however, the calculation depends on exactly how the utility program affects the market, through only the vehicles directly impacted by (or participating in) the program. The "no EV growth" baseline is not a factor in these calculations. These offer-specific tests consider factors like shifting of load off-peak (for participating vehicles), and the dilution impacts of electricity delivered directly through utility-provided EV chargers (in MUD and public settings). The zero EV-growth baseline is not relevant in those cases.

Case No. 9645
Baltimore Gas and Electric Co.
Response to OPC Data Request 13
Request Received: 06/30/2020
Response Date: 07/15/2020
Sponsor: Mark Warner

Item No.: OPCDR13-21

Referring to the dilution of utility revenues on page 29, lines 15 to 22, of Witness Warner's Direct Testimony, please answer the following:

a. Please provide all known examples where the increase in ratepayer unit costs created by the decrease in overall consumption volume due to EE programs is included as a cost in EE program BCAs? Please fully cite any example, including the name of utility EE program, jurisdiction, and docket number if known.

RESPONSE:

Mr. Warner's assertion regarding dilution dynamics, as illustrated (in reverse form) based on how EE might affect ratepayer costs, is based on well-established rate-making principles, not references to any particular rate case. Consideration of consumption volume is typically a fundamental part of utility ratemaking calculations, and it is arithmetically inevitable that for a given distribution revenue requirement, as volume goes up the unit cost ($/kwhr) declines, and as volume goes down the unit cost increases. Given that volume-related changes have a direct economized impact on customer utility bills, they are included in the BCA. Regarding examples of EE-induced volume changes being included in an EE BCA, Mr. Warner has not completed a comprehensive review of all EE filings, since as noted above, his reference to EE similarities (in reverse form) was intended to illustrate basic rate-making principles. However, inclusion of volume-related considerations are standard practice for EE BCA, especially consideration of "lost revenues" in the Ratepayer Impact Measure (RIM test). Please see widely accepted references for these methodologies, including the CPUC "Standard Practice Manual" (October, 2001), and the National Efficiency Screening Project (NESP) "National Practice Manual" (Spring, 2017). Specifically, on page 111 of the NESP reference, "lost revenues" are listed as a recognized cost for the RIM test, with specific allusion to EE-related volume changes in the description of the RIM test on page 114. Any utility rate-case or filing that uses a RIM test consistent with these standardized protocols would therefore include volume-related impacts in the RIM test.