

92DC42  
PO Box 6066  
Newark, DE 19714-6066

302.429.3105 - Telephone  
302.429.3801 - Facsimile  
philip.passanante@pepcoholdings.com

500 N. Wakefield Drive  
Newark, DE 19702

atlanticcityelectric.com

October 19, 2020

**VIA ELECTRONIC MAIL**

[aida.camacho@bpu.nj.gov](mailto:aida.camacho@bpu.nj.gov)  
[board.secretary@bpu.nj.gov](mailto:board.secretary@bpu.nj.gov)

Aida Camacho-Welch  
Secretary of the Board  
Board of Public Utilities  
44 South Clinton Avenue, 9<sup>th</sup> Floor  
P.O. Box 350  
Trenton, New Jersey 08625-0350

**RE:** In the Matter of the Petition of Atlantic City Electric Company for Approval of a  
Voluntary Program for Plug-In Vehicle Charging  
Amended Petition  
BPU Docket No. EO18020190

Dear Secretary Camacho-Welch:

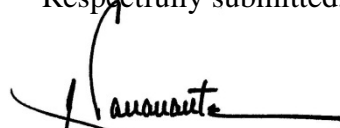
Pursuant to Commissioner Upendra Chivukula's October 15, 2020 Order on Motion to Modify the Procedural Schedule issued in the above-referenced matter, enclosed please find the pre-filed Rebuttal Testimonies of David S. Schatz, Jennifer M. Grisham, Mark Warner, and Michael Normand on behalf of Atlantic City Electric Company in connection with the above-referenced matter.

Consistent with the Order issued by the New Jersey Board of Public Utilities (the "Board" or "BPU") in connection with *In the Matter of the New Jersey Board of Public Utilities' Response to the COVID-19 Pandemic for a Temporary Waiver of Requirements for Certain Non-Essential Obligations*, BPU Docket No. EO20030254, Order dated March 19, 2020, this document is being electronically filed with the Secretary of the Board and the New Jersey Division of Rate Counsel. No paper copies will follow.

Aida Camacho-Welch  
October 19, 2020  
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We thank the Board and all parties for all courtesies extended. Feel free to contact the undersigned with any questions.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Passanante", with a long horizontal line extending to the right.

Philip J. Passanante  
An Attorney at Law of the  
State of New Jersey

Enclosure

cc: Service List

I/M/O Petition of Atlantic City Electric Company for Approval of a  
Voluntary Program for Plug-In Vehicle Charging  
BPU Docket No. EO18020190

**Service List**

**BPU**

Honorable Upendra Chivukula  
Commissioner  
Board of Public Utilities  
44 South Clinton Avenue, 9<sup>th</sup> Floor  
P.O. Box 350  
Trenton, NJ 08625-0350  
[upendra.chivukula@bpu.nj.gov](mailto:upendra.chivukula@bpu.nj.gov)

Aida Camacho-Welch  
Secretary of the Board  
Board of Public Utilities  
44 South Clinton Avenue, 9<sup>th</sup> Floor  
P.O. Box 350  
Trenton, NJ 08625-0350  
[aida.camacho@bpu.nj.gov](mailto:aida.camacho@bpu.nj.gov)  
[board.secretary@bpu.nj.gov](mailto:board.secretary@bpu.nj.gov)

Paul Flanagan, Esquire  
Executive Director  
[paul.flanagan@bpu.state.nj.us](mailto:paul.flanagan@bpu.state.nj.us)

Abraham Silverman, Esquire  
Chief Counsel  
[abe.silverman@bpu.nj.gov](mailto:abe.silverman@bpu.nj.gov)

Benjamin Witherell, Ph.D  
[benjamin.witherell@bpu.nj.gov](mailto:benjamin.witherell@bpu.nj.gov)

Stacy Peterson  
Director, Division of Energy  
[stacy.peterson@bpu.nj.gov](mailto:stacy.peterson@bpu.nj.gov)

Michael Hornsby  
Office of Policy and Planning  
[michael.hornsby@bpu.nj.gov](mailto:michael.hornsby@bpu.nj.gov)

Sherri Jones  
Assistant Director  
Division of Clean Energy  
[sherri.jones@bpu.nj.gov](mailto:sherri.jones@bpu.nj.gov)

Andrea Hart, Esquire  
Legal Specialist  
[andrea.hart@bpu.nj.gov](mailto:andrea.hart@bpu.nj.gov)

Jackie O'Grady  
Office of the Chief Economist  
[jackie.ogrady@bpu.nj.gov](mailto:jackie.ogrady@bpu.nj.gov)

Scott Sumliner  
[scott.sumliner@bpu.nj.gov](mailto:scott.sumliner@bpu.nj.gov)

Christopher Oprysk  
[christopher.oprysk@bpu.nj.gov](mailto:christopher.oprysk@bpu.nj.gov)

Kevin Moss  
[kevin.moss@bpu.nj.gov](mailto:kevin.moss@bpu.nj.gov)

Cathleen Lewis  
[cathleen.lewis@bpu.nj.gov](mailto:cathleen.lewis@bpu.nj.gov)

Carol Artale, Esquire  
[carol.artale@bpu.nj.gov](mailto:carol.artale@bpu.nj.gov)

Kelly Mooij  
[kelly.mooij@bpu.nj.gov](mailto:kelly.mooij@bpu.nj.gov)

Sara Bluhm  
[sara.bluhm@bpu.nj.gov](mailto:sara.bluhm@bpu.nj.gov)

**DIVISION OF LAW**

Pamela L. Owen, Esquire  
Deputy Attorney General  
Division of Law  
25 Market Street  
P.O. Box 112  
Trenton, NJ 08625  
[pamela.owen@law.njoag.gov](mailto:pamela.owen@law.njoag.gov)

Brandon C. Simmons, Esquire  
Deputy Attorney General  
Division of Law  
[brandon.simmons@law.njoag.gov](mailto:brandon.simmons@law.njoag.gov)

Alex Moreau, Esquire  
Deputy Attorney General  
Division of Law  
[alex.moreau@law.njoag.gov](mailto:alex.moreau@law.njoag.gov)

Michael Beck, Esquire  
Deputy Attorney General  
Division of Law  
[michael.beck@law.njoag.gov](mailto:michael.beck@law.njoag.gov)

Daren Eppley, Esquire  
Deputy Attorney General  
Division of Law  
[daren.eppley@law.njoag.gov](mailto:daren.eppley@law.njoag.gov)

**RATE COUNSEL**

Stefanie A. Brand Esquire  
Director  
Division of Rate Counsel  
140 East Front Street, 4th Floor  
P.O. Box 003  
Trenton, NJ 08625-0003  
[sbrand@rpa.nj.gov](mailto:sbrand@rpa.nj.gov)

Brian O. Lipman, Esquire  
Litigation Manager  
Division of Rate Counsel  
[blipman@rpa.nj.gov](mailto:blipman@rpa.nj.gov)

Brian Weeks, Esquire  
Division of Rate Counsel  
[bweeks@rpa.nj.gov](mailto:bweeks@rpa.nj.gov)

Kurt S. Lewandowski, Esquire  
Division of Rate Counsel  
[klewando@rpa.nj.gov](mailto:klewando@rpa.nj.gov)

Felicia Thomas-Friel Esquire  
Managing Attorney  
Division of Rate Counsel  
[ftthomas@rpa.nj.gov](mailto:ftthomas@rpa.nj.gov)

Shelly Massey  
Paralegal  
Division of Rate Counsel  
[smassey@rpa.nj.gov](mailto:smassey@rpa.nj.gov)

**RATE COUNSEL  
CONSULTANTS**

David E. Peterson  
Chesapeake Regulatory Consultants  
Suite 202  
10351 Southern Maryland Blvd  
Dunkirk, MD 20754-3048  
[davep@chesapeake.net](mailto:davep@chesapeake.net)

Ezra D. Hausman, Ph.D.  
77 Kaposia Street  
Newton, MA 02466  
[ezra@ezrahausman.com](mailto:ezra@ezrahausman.com)

Brian Kalcic  
Excel Consulting  
225 S. Meramec Avenue, Suite 720T  
St. Louis, MO 63105  
[excel.consulting@sbcglobal.net](mailto:excel.consulting@sbcglobal.net)

**ACE**

Philip J. Passanante, Esquire  
Assistant General Counsel  
Atlantic City Electric Company  
92DC42  
500 N. Wakefield Drive  
P.O. Box 6066  
Newark, DE 19714-6066  
[philip.passanante@pepcoholdings.com](mailto:philip.passanante@pepcoholdings.com)

Clark M. Stalker, Esquire  
Associate General Counsel  
Atlantic City Electric Company  
92DC42  
500 N. Wakefield Drive  
P.O. Box 6066  
Newark, DE 19714-6066  
[clark.stalker@exeloncorp.com](mailto:clark.stalker@exeloncorp.com)

Heather Hall, Manager  
New Jersey Regulatory Affairs  
Atlantic City Electric Company  
92DC56  
500 N. Wakefield Drive  
P.O. Box 6066  
Newark, DE 19714-6066  
[heather.hall@pepcoholdings.com](mailto:heather.hall@pepcoholdings.com)

Michael Normand  
Pepco Holdings LLC - 92DC56  
500 N. Wakefield Drive  
P.O. Box 6066  
Newark, DE 19714-6066  
[michael.normand@delmarva.com](mailto:michael.normand@delmarva.com)

Jennifer Grisham  
Principal Business Project Manager  
Pepco Holdings LLC – EP3624  
701 Ninth Street, NW  
Washington, DC 20068-0001  
[jmgrisham@pepcoholdings.com](mailto:jmgrisham@pepcoholdings.com)

**PSEG**  
Bernard Smalls  
PSE&G Services Corporation  
80 Park Plaza, T-5  
P.O. Box 570  
Newark, NJ 07102  
[bernard.smalls@pseg.com](mailto:bernard.smalls@pseg.com)

Michele Falcao  
PSE&G Services Corporation  
[michele.falcao@pseg.com](mailto:michele.falcao@pseg.com)

Justin B. Incardone, Esquire  
Associate General Regulatory  
Counsel  
PSEG Services Corporation  
[justin.incardone@pseg.com](mailto:justin.incardone@pseg.com)

**JCP&L**  
Lauren M. Lepkoski, Esquire  
FirstEnergy Service Company  
Legal Department  
2800 Pottsville Pike  
Reading, PA 19612-6001  
[llepkoski@firstenergy.com](mailto:llepkoski@firstenergy.com)

**CHARGEPOINT, INC.**  
Murray E. Bevan, Esquire  
Bevan, Mosca & Guiditta P.C.  
222 Mount Airy Road, Suite 200  
Basking Ridge, NJ 07920  
[mbevan@bmg.law](mailto:mbevan@bmg.law)

William K. Mosca, Jr., Esquire  
[wmosca@bmg.law](mailto:wmosca@bmg.law)

Katherine M. Dailey  
[kdailey@bmg.law](mailto:kdailey@bmg.law)

Jennifer McCave, Esquire  
[jmccave@bmg.law](mailto:jmccave@bmg.law)

**GREENLOTS**  
Thomas Ashley  
Vice President, Policy  
Greenlots  
925 N. La Brea Avenue, 6th Floor  
Los Angeles, CA 90038  
[tom@greenlots.com](mailto:tom@greenlots.com)

Joshua Cohen  
Greenlots  
[jcohen@greenlots.com](mailto:jcohen@greenlots.com)

Nathan Howe, Esquire  
McCarter & English  
Four Gateway Center  
100 Mulberry Street  
Newark, NJ 07102  
[nhowe@mccarter.com](mailto:nhowe@mccarter.com)

Guillermmo Artiles, Esquire  
McCarter & English  
[gartiles@mccarter.com](mailto:gartiles@mccarter.com)

**NRDC, ENJ, Sierra Club, TSTC,  
WEC, GreenFaith and Isles**  
Daniel Greenhouse, Esquire  
Eastern Environmental Law Center  
50 Park Place, Suite 1025  
Newark, NJ 07102  
[dgreenhouse@easternenvironmental.org](mailto:dgreenhouse@easternenvironmental.org)

William Bittinger, Esquire  
Eastern Environmental Law Center  
[wbittinger@easternenvironmental.org](mailto:wbittinger@easternenvironmental.org)

**TESLA**  
Kevin Auerbacher, Esquire  
Managing Counsel  
Tesla, Inc.  
1333 H. Street, NW, Floor 11  
Washington, DC 20005  
[kauerbacher@tesla.com](mailto:kauerbacher@tesla.com)

Patrick Bean  
Global Charging Policy Lead  
Tesla, Inc.  
[pbean@tesla.com](mailto:pbean@tesla.com)

Bill Ehrlich  
Senior Policy Advisor  
Tesla, Inc.  
[wehrlich@tesla.com](mailto:wehrlich@tesla.com)

**EVgo Services LLC**  
Martin C. Rothfelder  
Rothfelder Stern LLC  
407 Greenwood Avenue, Unit 301  
Trenton, NJ 08609-2158  
[mrothfelder@rothfelderstern.com](mailto:mrothfelder@rothfelderstern.com)

Sara Rafalson  
Director of Market Development  
EVgo Services LLC  
11835 West Olympic Blvd., Suite 900  
Los Angeles, CA 90064  
[sara.rafalson@evgo.com](mailto:sara.rafalson@evgo.com)

Carine Dumit  
Director, Market Development  
[carine.dumit@evgo.com](mailto:carine.dumit@evgo.com)

**ALLIANCE**  
Phil Jones  
Executive Director  
1402 Third Avenue, Suite 1315  
Seattle, WA 98101  
[phil@evtransportationalliance.org](mailto:phil@evtransportationalliance.org)

Michael I. Krauthamer  
Senior Advisor  
[michael@evtransportationalliance.com](mailto:michael@evtransportationalliance.com)

Barbara J. Koonz, Esquire  
Greenbaum, Rowe, Smith & Davis  
75 Livingston Avenue  
Roseland, NJ 07068  
[bkoonz@greenbaumlaw.com](mailto:bkoonz@greenbaumlaw.com)

**ELECTRIFY AMERICA, LLC**  
Ira G. Megdal, Esquire  
Cozen O'Connor  
457 Haddonfield Road, Suite 300  
P.O. Box 5459  
Cherry Hill, NJ 08002  
[imegdal@cozen.com](mailto:imegdal@cozen.com)

William Lesser, Esquire  
Cozen O'Connor  
[wlesser@cozen.com](mailto:wlesser@cozen.com)

**ATLANTIC CITY ELECTRIC COMPANY**  
**BEFORE THE NEW JERSEY**  
**BOARD OF PUBLIC UTILITIES**  
**REBUTTAL TESTIMONY OF DAVID S. SCHATZ**  
**BPU DOCKET NO. EO18020190**

1   **Q1.   Please state your name and business affiliation.**

2   **A1.**           My name is David S. Schatz, I am the Director of Strategy for Pepco Holdings LLC  
3           (“PHI”). I am testifying on behalf of Atlantic City Electric (“ACE” or the “Company”).

4   **Q2.   What are your responsibilities in your role?**

5   **A2.**           In this capacity, I lead regulatory initiatives related to the development and  
6           deployment of new and emerging energy technologies. These initiatives involve a range of  
7           grid-connected solutions, including distributed energy resources, transportation  
8           electrification programs, and data-enabled grid components. Further, I advance the  
9           strategic goals of ACE and its PHI sister utilities in implementing programs that use these  
10          technologies to create and/or enhance benefits for the utility and its customers

11   **Q3.   Please state your educational background and professional experience.**

12   **A3.**           Prior to my role at PHI, I served as Director of Public Policy for ChargePoint, an  
13          electric vehicle (“EV”) charging network company. In that position I managed regulatory  
14          and government affairs engagements related to transportation electrification policy in states  
15          across the Mid-Atlantic, Southeast, and Midwest regions of the United States. From 2015  
16          to 2016, I was Deputy Director for Policy and Electricity Markets for SolarCity, a rooftop  
17          solar provider. In that role my primary responsibilities involved advancing policy to  
18          support commercial solar applications nationally. From 2013 to 2015, I was Senior  
19          Consultant at the energy practice of Booz Allen Hamilton, where I led and assisted multiple  
20          Department of Defense components to develop and deploy advanced energy projects,

1 including onsite backup generation and utility-scale solar. My previous roles also include  
2 work at the U.S. Air Force Office of the General Counsel, Environment and Installations  
3 Division, where I conducted diligence on a vehicle-to-grid pilot and served as a researcher  
4 on energy-related topics. I hold a Master of Arts degree in Environmental Policy from  
5 American University, a Master of Arts degree in Sociocultural Anthropology from George  
6 Washington University, and a Bachelor of Arts degree from George Washington  
7 University.

8 **Q4. Do you adopt the Direct Testimony of Company Witness Kevin McGowan?**

9 **A4.** Yes. I will be the policy witness in this proceeding and have adopted Company  
10 Witness Kevin McGowan's testimony and data responses to date.

11 **Q5. What is the purpose of your Rebuttal Testimony?**

12 **A5.** The purpose of my rebuttal testimony will be to provide a summary of the Board  
13 of Public Utilities' ("BPU's" or "Board's") recent order on Staff's Electric Vehicle  
14 Infrastructure Ecosystem Straw Proposal ("BPU EV Ecosystem Order"), and describe the  
15 modifications ACE is making to its petition<sup>1</sup> in the subject docket to align with the policies  
16 advanced in that Order. Additionally, my rebuttal testimony will provide the Company's  
17 responses to the policy positions intervening party witnesses have submitted in direct  
18 testimony. To that end, my testimony specifically addresses the foundations for the Board's  
19 consideration and approval of ACE's petition and, at a high-level, the merits of utility-  
20 facilitated charging infrastructure deployment. While my testimony focuses on the  
21 rationale for the Company's program modifications, the rebuttal testimonies of Company

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<sup>1</sup> "In the Matter of the Petition of Atlantic City Electric Company for Approval of a Voluntary Program for Plug-In Vehicle Charging," Amended Petition, BPU Docket No. EO18020190.

Witnesses Grisham and Normand will provide direct responses to specific suggestions from intervenors related to the offerings in ACE's petition.

**Q6 How is your Rebuttal Testimony structured?**

**A6.** First, I provide an overview of the BPU EV Ecosystem Order and describe at a high level the Company's plans to adjust its offerings to align with the policies and guidelines articulated in that Order. Second, I reference current New Jersey law to confirm the statutory support for the Board's approval of the Company's proposals. Third, I describe the Company's view on the role the utility can play in facilitating further electrification of the transportation sector in New Jersey. Finally, I describe the Company's approach to rate design as it relates to advance EV charging infrastructure deployment.

**Q7. Please summarize the other parties' direct testimonies.**

**A7.** On September 18, 2020, several parties to the subject proceeding filed direct testimony on and provided responses to the ongoing development of New Jersey's electric vehicle ecosystem. The names of the intervening parties from which ACE received direct testimony are as follows:

- ChargePoint, LLC
- EVgo Services
- Electrify America
- Tesla
- Office of the Division of Rate Counsel
- Greenlots

- The Environmental and Community Groups (Natural Resources Defense Council, Environment New Jersey, Sierra Club, Tri-State Transportation Campaign, New Jersey Work Environment Council, Greenfaith, and Isles)

Overall, the direct testimonies are organized around several key topic areas related to New Jersey's electric vehicle ecosystem. These topics include, but are not limited to: 1) the distribution of benefits (both direct and indirect) of the deployment of electric vehicle charging infrastructure; 2) the roles of the utility in the facilitation of electric vehicle market growth, and more specifically the role of utility ownership of publicly available charging infrastructure; 3) the impacts of demand charges on the profitability of publicly available electric vehicle charging infrastructure and the solution mechanisms designed to mitigate those impacts; 4) the availability of and qualification criteria for utility offered incentives for deployment of electric vehicle charging infrastructure; 5) the equitable distribution of electric vehicle charging infrastructure in low income communities; and, 6) the principles of rate design employed to structure rates charged to various customer classes for the use of EV infrastructure.

**I. ACE's Modifications to Align with the Policies Established in the Board's EV Ecosystem Order**

**Q8. Discuss the BPU's EV Ecosystem Order and its policy on utility investment in EV charging infrastructure.**

A8. On May 18, 2020, the Board established BPU Docket No. QO20050357. In establishing that docket, the Board opened a proceeding that would "help inform Staff's recommendations to the Board for developing a pathway forward for electric vehicle charging infrastructure build-out in the State, and the roles of private and public entities in



1       this endeavor.” On the same date, BPU Staff (“Staff”) released the New Jersey Electric  
2       Vehicle Infrastructure Ecosystem 2020 Straw Proposal (“Straw Proposal”), which  
3       presented Staff’s viewpoints on the market design elements necessary to “create a  
4       comprehensive EV ecosystem that provides consumers with easy access to EV charging  
5       infrastructure where they work and play.” On June 3, 2020, Staff held a stakeholder  
6       meeting to solicit comments on the Straw Proposal. On September 23, 2020, the Board  
7       released the Order on the Straw Proposal after consideration of stakeholder comments.

8             The BPU EV Ecosystem Order acknowledges the importance of utility  
9       participation in a balanced approach to the facilitation of growth in New Jersey’s EV  
10      market. Following the guidance provided in Staff’s Straw Proposal, the Order supports  
11      make ready or charger ready infrastructure investment as the primary role of the utility.  
12      The BPU Order refers to this as a “shared responsibility model” for EV charging  
13      deployment. Under this shared responsibility model, private charging companies or  
14      operators would invest in charging infrastructure at a site, and the utility would provide  
15      investment to cover costs related to equipment to make that site ready for charger  
16      deployment. Additionally, the BPU EV Ecosystem Order enables utility ownership and  
17      operation of charging stations, specifically at areas or locations of “last resort,” where the  
18      competitive market has not developed charging locations. According to the policy in the  
19      Order, the combination of make ready investments and deployments in last resort areas  
20      results in an equitable distribution of EV charging services. Additionally, the Order  
21      encourages the advancement of proposed rate structures to address low utilization and  
22      economics of DC fast chargers (“DCFC”), optimize residential charging for grid

operations, and align multi-unit dwelling charging rates with other residential rates to the extent possible.

**Q9. Does ACE's current proposal align with the Board's EV Ecosystem Order?**

A9. In many respects, yes. Aspects of ACE's pending filing are in alignment with the policy positions supported by the BPU EV Ecosystem Order. ACE's current plug-in vehicle proposal advances 13 distinct, segment-specific offerings that not only address the need for public charging in ACE's territory, but provide measures to encourage and provide charging availability at home, around town, and between towns. These measures include incentives for residential, multi-unit dwelling, workplace, and public charging, make ready infrastructure for DC fast charging, rate designs for beneficial electrification, and a defined role of the utility-provided deployment of public charging infrastructure. This broad spectrum of offerings is designed to meet the same policy goal as the Order – to encourage a lasting EV ecosystem. The portfolio approach ACE proposed leverages the strengths of various business models – incentives, make ready, and utility ownership – and a diversity of market participants to meet the challenges of each market segment. Additionally, ACE includes rate design-based offerings to encourage off-peak charging at home and foster more DCFC deployment, two key policy areas in the Order. These program structures and rate design proposals are advanced and supported in the BPU EV Ecosystem Order.

**Q10. Has ACE proposed any modifications to its EV charging programs to further align its offerings with the BPU EV Ecosystem Order?**

A10. Yes. As further detailed in the Rebuttal Testimony of Company Witness Grisham, in order to further align with the Order, ACE proposes changes to Offerings 7, 8, and 9. Overall, these modifications place more focus on make ready as a primary model for utility

1 investment and orient utility ownership of charging to areas of last resort. These  
2 modifications are described at high level below:

- 3 1. The chargers proposed for Offerings 7 and 9 are combined into a single offering for  
4 DCFC deployment. Those deployments are divided between make ready investments  
5 and utility owned and operated charging stations in areas of last resort. In total, the  
6 make ready investments will account for approximately 75% of the funding for all  
7 DCFC charging station deployments under this offering; and utility owned and  
8 operated stations will account for approximately 25%.
- 9 2. Utility owned and operated DCFC will be deployed in areas of last resort, as defined  
10 in the BPU EV Ecosystem Order. Additionally, those charging station locations will be  
11 identified and installed in the timeline advanced in the Order to allow for private market  
12 development. The Company will look for opportunities to install charging in  
13 overburdened communities 12 months from the launch of make ready programs, and  
14 18 months from that launch for locations in non-overburdened communities.  
15 Importantly, the Company proposes to phase in these deployments up to 10 DCFC per  
16 year, amounting to a maximum of 40 DCFC overall.
- 17 3. Offering 8, a program originally proposing utility owned and operated Level 2  
18 charging, is converted to a make ready investment model for all chargers under that  
19 program.
- 20 4. The demand charge set point program in Offering 9 will remain as a standalone offering  
21 applied to DCFC deployments resulting from the make ready program under this  
22 proposal.

1           5. The Company proposes to recover costs related to these expanded make ready offerings  
2           for Level 2 and DCFC charging infrastructure. The details these cost recovery plans  
3           are outlined in Company Witness Normand's rebuttal testimony.

4           A summary of the Company's revised program offerings and associated costs are shown  
5           in Table 1 of Company Witness Grisham's Rebuttal Testimony.  
6

7           **II.     Approval of ACE's PIV Petition is Consistent with the BPU's Statutory**  
8           **Authority to Require Utilities to Deliver Services in a Manner that promotes**  
9           **Environmental Stewardship.**

10       **Q11. Do any of the direct testimonies submitted by intervening parties question the BPU's**  
11       **statutory authority for approval of ACE's PIV proposal?**

12       A11.           Yes. In Direct Testimony submitted on behalf of the New Jersey Office of The  
13       Division of Rate Counsel, Witness Hausman posits that, in his opinion, the proposals  
14       offered by ACE are not supported by its statutory obligation to provide safe, adequate, and  
15       proper services at just and reasonable rates. Witness Hausman further asserts that there  
16       exists no mandate or authority to implement the company's EV proposals on a rate  
17       regulated basis in New Jersey.

18       **Q12. Does Witness Hausman rely on or cite to any legal analysis supporting his position?**

19       A12.           In an effort to support his opinion regarding the statutory obligation of the utility in  
20       this regard, Witness Hausman references N.J.S.A. 48:2-23. The full text of this section of  
21       the law reads as follows:

22                    "The board may, after public hearing, upon notice, by order in writing, require any  
23       public utility to furnish safe, adequate and proper service, including furnishing and  
24       performance of service in a manner that tends to conserve and preserve the quality of the

1 environment and prevent the pollution of the waters, land and air of this State, and  
2 including furnishing and performance of service in a manner which preserves and protects  
3 the water quality of a public water supply, and to maintain its property and equipment in  
4 such condition as to enable it to do so.”

5 **Q13. Does the Company agree with Witness Hausman’s argument regarding the statutory**  
6 **basis for submittal of its filing?**

7 A13. No. Given that ACE’s program is designed to contribute to the reduction of  
8 greenhouse gas emissions and criteria pollutants across the state, ACE believes that its  
9 petition clearly falls within the statutory authority of the BPU to require public utilities to  
10 provide service in a manner that contributes to the objectives of public health and  
11 environmental protection. These societal and environmental benefits are captured and  
12 further explained in Company Witness Warner’s direct and rebuttal testimonies.

13 **Q14. Do Witness Hausman’s views align with the policy positions established in the BPU**  
14 **EV Ecosystem Order?**

15 A14. In part. On page 19 of the Order, the Board confirms that the advancement of EVs  
16 through petitions like the one ACE puts forward is a holistic exercise that is within its  
17 statutory authority to require public utilities to provide “service in a manner that tends to  
18 conserve and preserve the quality of the environment and prevent the pollution of the  
19 waters, land and air of this State.” As such, it is ACE’s belief that the Order reinforces the  
20 Company’s position and supersedes Witness Hausman’s opinion that there is statutory  
21 basis for the rejection of ACE’s petition in its entirety. In his testimony, Witness  
22 Hausman also states that if the Board does approve the EV filing, limiting the primary  
23 role of the utility to the installation of make ready infrastructure would be reasonable.

1 Only in offering this alternative does Witness Hausman's testimony align with the policy  
2 positions supported by the BPU EV Ecosystem Order.

3 **Q15. Do any of the direct testimonies of intervening parties argue that not all New Jersey**  
4 **ratepayers would realize the of benefits of greater EV adoption resulting from ACE's**  
5 **proposal?**

6 A15. Yes. In his Direct Testimony submitted on behalf of the New Jersey Office of the  
7 Division of Rate Counsel, Witness Peterson posits that ACE's program is inconsistent with  
8 cost-based ratemaking principles in that it is intentionally designed to force ACE's general  
9 body of customers to subsidize the Company's costs of providing EV charging offerings  
10 to relatively few electric vehicle customers, resulting in non-EV driver residential  
11 customers paying for a service for which they will receive no benefit.

12 **Q16. Does the Company agree with Witness Peterson's characterization of the distribution**  
13 **of benefits of its PIV program?**

14 A16. No. It is commonly understood that both EV and non-EV drivers realize the societal  
15 benefits associated with the deployment of electric vehicles and, by extension, the  
16 electrification of the transportation sector writ large. These direct and non-direct benefits  
17 are outlined in the Direct Testimony of Company Witnesses Warner, as well as in the Direct  
18 Testimony of the Environmental Community Groups.

1       **III.    The Utility's Involvement in the Installation of EV Charging Infrastructure is a**  
2       **Critical to the Achievement of the State's Transportation Electrification Goals**  
3

4       **Q17.   Do all of the intervenors agree that ACE has a role to play in enabling the**  
5       **electrification of the transportation sector?**

6       **A17.**       Yes. All parties agree that the utility has a role to play in facilitating the  
7       development of the EV infrastructure ecosystem in New Jersey. Where there are  
8       differences among the parties, these differences relate to the extent of the role the utility  
9       should play, with specific reference to ownership and operation of charging infrastructure.

10      **Q18.   Does the Company agree that there is a role for both utility-owned and privately**  
11      **owned charging infrastructure to meet New Jersey's goals?**

12      **A18.**       Yes. As supported and confirmed by the Board's recent order, ACE agrees that  
13      there is a role for both utility and privately owned charging infrastructure, and it has  
14      designed its portfolio of offerings with this collaboration in mind.

15      **Q19.   Do any of the direct testimonies submitted by intervening parties oppose utility**  
16      **ownership of publicly available charging infrastructure?**

17      **A19.**       Yes. In their direct testimonies, Witnesses Dumit of EVgo, Witness Miller of  
18      ChargePoint, and Witness Shah of Electrify America posit that utility ownership of  
19      publicly available EV charging infrastructure could restrict ongoing efforts by the private  
20      sector to deploy charging infrastructure in high utilization transportation corridors across  
21      the state. Additionally, Witness Hausman of Rate Counsel posits that the Company cannot  
22      demonstrate that the areas it has identified would not otherwise be served by the private  
23      sector; and on that basis, utility ownership of publicly available charging infrastructure  
24      should be disallowed.

1 **Q20. Does the Company believe that the modifications it proposes to its petition prioritize**  
2 **private market development, while maintaining a role for utility ownership of**  
3 **charging infrastructure, as clarified in the BPU EV Ecosystem Order?**

4 A20: Yes. Consistent with the positions expressed in the Board's recent order, ACE has  
5 modified its proposal to not only prioritize deployment of make ready infrastructure in  
6 support of privately owned and operated EVSE infrastructure, but also support a more  
7 targeted role for utility ownership in communities (both overburdened and non-  
8 overburdened) where interest and investment from the competitive market has yet to  
9 materialize. ACE maintains that deployment of utility owned electric vehicle charging  
10 infrastructure is a key component in the portfolio of strategies necessary to achieve not  
11 only the goals established by recent policy and legislative efforts in New Jersey, but also  
12 contributes to the goal of equitable deployment of charging infrastructure across its service  
13 territory as well.

14  
15 **IV. ACE Leverages Principles of Cost Causation to Design Rates that are Reflective**  
16 **of the Cost to Serve EV Charging Infrastructure**  
17

18 **Q21. Following the principles of cost causation that ACE has historically leveraged in the**  
19 **design of rates for its various customer classes, ACE's portfolio of offerings features**  
20 **demand charges for publicly available DCFC charging infrastructure. Do any of the**  
21 **parties oppose the use demand charges in direct testimony?**

22 A21. Yes. In his Direct Testimony submitted on behalf of Electrify America, Witness  
23 Shah posits that "fixed charges and demand charges, and in particular those without a  
24 causal connection to the marginal cost to serve DCFC infrastructure, present a barrier to  
25 expanded DCFC investment and therefore, widespread transportation electrification."



1 **Q22. Does ACE agree that demand charges should not be utilized in delivery of service?**

2 A22. As with all other electric rates, ACE believes that EV charging rates should be  
3 reflective of the underlying cost to provide service to EV chargers. As further supported  
4 in the Rebuttal Testimony of Company Witness Normand, it is ACE's belief that the  
5 demand charge sends a cost-causative price signal to customers reflecting historical  
6 embedded infrastructure costs. While temporary measures to reduce the impact of demand  
7 charges may have a role in support public policy goals, it is ACE's belief that the demand  
8 charge is an important cost-based price signal that should not be omitted from rates.

9 **Q23. Do any of the intervenors support the use of demand charges in their direct**  
10 **testimony?**

11 A23. Yes. In his rebuttal testimony, Witness Hausman refers to Rate Counsel's  
12 comments on Staff's proposal, highlighting that "...Rate counsel does not support the  
13 complete elimination of demand charges or the economic signal that they represent..."

14 **Q24. In his testimony, Witness Shah highlights that demand charges "impose and**  
15 **extraordinary financial burden on public DCFC operators," and further highlights**  
16 **that this burden is exacerbated in markets characterized by lower utilization levels.**  
17 **Does ACE's filing include any mechanisms designed to lessen the near-term financial**  
18 **impact of demand charges on the economics of charging stations during periods of**  
19 **low utilization?**

20 A24. Yes. As an element of Offering 9, the set point incentive is designed to minimize  
21 the barriers to EV adoption by lessening the near-term financial impact of demand charges  
22 on the project economics of publicly available charging stations during the nascent stages  
23 of market development in which the average expected utilization of EV charging

1 infrastructure is expected to be low. By limiting the effective monthly cost of electricity,  
2 this incentive supports monthly bill predictability to owners of newly installed public  
3 DCFC infrastructure during periods of low utilization.

4 **Q25. Do any of the intervenors oppose the set-point solution in favor of a more permanent**  
5 **tariff structure specifically designed for EVs?**

6 A25. Yes. In his Direct Testimony, Witness Shah posits that a demand charge limiter  
7 mechanism like the set point may not be sufficient to provide enough “headroom” for  
8 EVSE infrastructure operators to recover capital and operating costs. As such, Witness  
9 Shah suggests that the Board should expand upon the demand limiter provision already  
10 approved within ACE’s MGS secondary rate schedule, and approve a marginal cost,  
11 permanent EV rate that provides effective utility rates for electricity delivered to public  
12 charging stations. Additionally, in his Direct Testimony, Witness Miller of Chargepoint  
13 posits that the Board should reject the set point solution, and instead order ACE to develop  
14 and file one or more long-term commercial and industrial rate options that provide  
15 alternatives to traditional, demand-based commercial and industrial rates. Finally, in his  
16 Direct Testimony, Witness Ehrlich of Tesla posits that the value of the set point should be  
17 set to the commercial customer class average price of electricity, or at least the commercial  
18 customer class average cost per kilowatt hour of rate components billed on a demand basis.

19 **Q26. Does ACE agree with these positions?**

20 A26. No. Embedded in the design of the set point solution is a methodology that adjusts the size  
21 of the ratepayer funded incentive offered to operators of publicly available DCFC charging  
22 stations based on monthly realized utilization at those charging stations. In this way, the  
23 set point is designed to provide financial support to owners of newly installed publicly

1 available DCFC infrastructure during periods of low utilization using a mechanism that is  
2 designed to scale down over time. As average monthly utilization increases due to  
3 expanding EV drivership, and the effective cost of electricity approaches the \$/kwh level  
4 of set point, the size of the incentive will grow smaller until the point at which it is no  
5 longer needed.

6 ACE believes that this approach to mitigating the short-term cost impacts of  
7 demand charges effectively addresses the realities of market conditions marked by lower  
8 levels of charger utilization. As highlighted in greater detail in Company Witness  
9 Normand's Rebuttal Testimony, it is ACE's position that instituting a permanent EV tariff  
10 during present levels of low utilization would effectively codify an ongoing subsidy that is  
11 not aligned with ACE's mandate to design rates on the basis of cost causality.

12 **Q27. Does this conclude your rebuttal testimony?**

13 A27. Yes.

**ATLANTIC CITY ELECTRIC COMPANY**  
**BEFORE THE NEW JERSEY**  
**BOARD OF PUBLIC UTILITIES**  
**REBUTTAL TESTIMONY OF JENNIFER M. GRISHAM**  
**BPU DOCKET NO. EO18020190**

1   **Q1.   Please state your name and position.**

2   A1.           My name is Jennifer M. Grisham, and I am the Principal Business Program  
3           Manager for the Electric Vehicle program at Pepco Holdings LLC “(PHI)”. I am testifying  
4           on behalf of Atlantic City Electric Company (“ACE” or “the Company”). My educational  
5           background and professional qualifications were provided in my Direct Testimony in this  
6           proceeding.

7   **Q2.   What is the purpose of your Rebuttal Testimony?**

8   A2.           The purpose of my Rebuttal Testimony is to detail the Company’s proposed  
9           program modifications as discussed in the Rebuttal Testimony of Company Witness  
10          Schatz. My comments will also address the recommended program design modifications  
11          posed by ChargePoint Witness Miller and Tesla Witness Ehrlich.

12                This testimony was prepared by me or under my direct supervision and control.  
13          The source documents for my testimony are Company records, public documents, and my  
14          personal knowledge and experience.

15   **Q3.   How is your testimony organized?**

16   A3.           First, I review the program modifications to ACE’s electric vehicle programs,  
17           which are designed to align with the Board’s recent order on electric vehicle policy (“BPU  
18           EV Ecosystem Order”), as described in the testimony of Company Witness Schatz. Second,  
19           I briefly comment on the recommendations of ChargePoint Witness Miller and Tesla  
20           Witness Ehrlich.

1       **I. Proposed Modifications to the Company's Electric Vehicle Program**

2       **Q4. Please summarize the Company's proposed modifications to the program design**  
3       **described in your Direct Testimony.**

4       A4.           As Company Witness Schatz describes, ACE's proposed modifications are  
5       designed to address and align with the policy advanced in the BPU EV Ecosystem Order.  
6       ACE proposes changes to Offerings 7, 8, and 9. Overall, these modifications place more  
7       focus on make ready as a primary model for utility investment and orient utility ownership  
8       of charging to areas of last resort. These modifications are described at high level below:

- 9       1. The chargers proposed for Offerings 7 and 9 are combined into a single offering for  
10       DC fast charging ("DCFC") deployment. Those deployments are divided between  
11       make ready investments and utility owned and operated charging stations. In total, the  
12       make ready investments will account for approximately 75% of the funding for all  
13       DCFC charging station deployments under this offering; and utility owned and  
14       operated stations will account for approximately 25%.
- 15       2. Utility owned and operated DCFC will be deployed in areas of last resort, as defined  
16       in the BPU EV Ecosystem Order. Additionally, those charging locations will be  
17       identified and established in the timeline advanced in the Order to allow for private  
18       market development. The Company will look for opportunities to install charging  
19       stations in overburdened communities 12 months from the approval of this program,  
20       and 18 months from approval for locations in non-overburdened communities.  
21       Importantly, the Company proposes to phase in these deployments to 10 DCFC  
22       installed per year, amounting to a maximum of 40 Company-owned DCFC overall.

1 3. Offering 8, a program originally proposing utility owned and operated Level 2 charging  
2 stations, is converted to a make ready investment model for all chargers under that  
3 program.

4 4. The demand charge set point program in Offering 9 will remain as a standalone offering  
5 applied to DCFC deployments resulting from the make ready program under this  
6 proposal.

7 **Q5. Describe the Company's revised approach to DC fast charging.**

8 A5. The Company proposes to combine the DCFC public charging in Offering 7 and  
9 the make ready program in Offering 9 into a single new Offering 7 designed to achieve  
10 buildout of publicly-accessible DCFC across the territory. This new offering, the Public  
11 DCFC program, will contain two sub-programs: 1) a make ready investment program, and  
12 2) a program for last resort locations. Approximately 75% of the overall Public DCFC  
13 program budget will be reserved for make ready investments in DCFC, as defined in the  
14 BPU EV Ecosystem Order. The remaining 25% of the Public DCFC program budget will  
15 be reserved to fund installation of utility owned and operated DCFC specifically in areas  
16 of last resort, as defined in the BPU EV Ecosystem Order.

17 **Q6. To ensure a diversity of sites and technology solutions for DCFC deployment, will the**  
18 **Company establish site and funding maximums for make ready investments for**  
19 **DCFC?**

20 A6. Yes. The DCFC make ready program will be an open, application-based utility  
21 program that is available to all potential site hosts planning to offer publicly accessible  
22 charging stations. The program eligibility will include charging solutions at 50kW, and the  
23 Company will prequalify a list of vendors to enable site host choice among multiple

1 charging equipment and networks. The Company also proposes the following program  
2 limitations for make ready investments for DCFC:

- 3 • 50kW class DCFC will be eligible for make ready cost coverage of 50% or up to  
4 \$28,125, whichever is lower, on a per port basis. The program will limit the  
5 maximum number of eligible ports per site at four ports.<sup>1</sup>
- 6 • No one entity may account for more than 10% of DCFC make ready program  
7 funding.

8 **Q7. Is the Company carving out a portion of make ready investments specifically for**  
9 **150kW charging?**

10 A7. No. While the Company believes that 150kW charging is an important and  
11 emerging charging solution, particularly along key corridors, the Company will remain  
12 consistent with its original application to open make ready investments to 50kW chargers.  
13 Importantly, Senate Bill 2252 specifically establishes targets for deployment of 150kW  
14 chargers, setting a goal of 400 chargers with a capacity of at least 150kW by 2025.<sup>2</sup> Should  
15 the Board and parties to ACE's Petition determine 150kW charger make ready investments  
16

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<sup>1</sup> These proposed make ready coverage limits were developed as part of the analysis the New York Department of Public Service advanced in January 13, 2020, contained in its white paper "Department of Public Service (DPS) Staff White Paper Regarding Electric Vehicle Supply Equipment and Infrastructure Deployment" in Case 18-E-0138 - Proceeding on Motion of the Commission Regarding Electric Vehicle Supply Equipment and Infrastructure. See <http://documents.dps.ny.gov/public/MatterManagement/CaseMaster.aspx?MatterSeq=56005>

<sup>2</sup> See [https://www.njleg.state.nj.us/2018/Bills/S2500/2252\\_U2.HTM](https://www.njleg.state.nj.us/2018/Bills/S2500/2252_U2.HTM).

1 necessary to achieve state goals, the Company is prepared to amend its program to offer an  
2 appropriate level of cost coverage for make ready and set-point incentive for this class of  
3 charger.<sup>3</sup>

4 **Q8. Referring to the utility owned and operated charging for areas of last resort, will the**  
5 **Company follow the parameters set forth in the BPU EV Ecosystem Order for utility-**  
6 **owned deployments?**

7 A8. Yes. In accordance with the Order, ACE will not pursue installation of utility owned  
8 and operated infrastructure in overburdened communities until 12 months have lapsed from  
9 the time of the launch of the make ready investment program. Similarly, the Company will  
10 not pursue sites in non-overburdened communities until 18 months from the make ready  
11 program launch. In addition to those parameters, ACE will only deploy 10 chargers per  
12 year over the five-year pilot, building to a maximum deployment of 40 total chargers.<sup>4</sup> The  
13 Company believes this will offer the private market sufficient time throughout the program  
14 to engage and apply for sites in the ACE territory, as is the intent of the BPU EV Ecosystem  
15 Order.

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<sup>3</sup>If the Company does move forward to support make ready investments for 150kW chargers, the Company would propose cost coverage of 50% or up to \$50,000, whichever is lower, on a per port basis, at a maximum of four chargers per site. This level of incentive is consistent with the aforementioned New York DPS whitepaper. An appropriate level of the set point incentive for the 150kW chargers would be established subject to additional analysis.

<sup>4</sup> As the Company is holding deployment of utility-owned charging stations for the initial 12 months of the make ready DCFC program, this means that ACE will install 10 DCFC per year in the remaining four years of the program, to amount to 40 total DCFC charging stations.



**Q9. How does ACE intend to set pricing at utility-owned stations in last resort areas?**

A9. In line with ACE's original proposal for utility-owned stations, the Company will set pricing based on a market average price that will be adjusted on a regular basis. This will ensure that competitive market pricing is effect at utility-owned stations, and those stations will not unfairly compete for driver utilization.

**Q10. Please describe the Company's modifications to Offering 8.**

A10. ACE proposes to convert Offering 8, originally a program for utility owned and operated Level 2 stations, to a make ready investment model with the same proposed budget. Similar to the proposal for the DCFC make ready program, the Company will prequalify a list of vendors to enable site host choice among multiple charging equipment and networks. The Company also proposes the following program limitations for make ready investments for Level 2:

- All Level 2 charging will be smart or connected charging infrastructure
- Level 2 charging equipment will be eligible to receive make ready cost coverage of 50% or up to \$4,500, whichever is lower, on a per port basis.
- The program will limit the maximum number of eligible ports per site at 10 ports.
- No one entity may account for more than 20% of make ready program funding.

**Q11. Does ACE propose to offer a utility owned and operated offering in last resort areas for Level 2 charging?**

A11. Not at this time. The Company believes that the Level 2 market is more robust in ACE's territory, and the revised make ready model may sufficiently attract private market activity throughout the territory. The Company will continue to assess the distribution of

charging stations throughout the program term and make adjustments that may include utility ownership of Level 2 charging stations as needed to ensure equity.

**Q12. Please summarize the changes to Offering 9.**

A12. As described above, the budget for the originally proposed make ready for DCFC in Offering 9 will be combined with the budget of Offering 7. The modified Offering 9 will be the Company's proposed set point method addressing barriers related to low utilization at stations that may experience a higher demand charge. While the set point methodology described in the Company's direct testimony remains unchanged, the Company proposes to make the set point eligible to all new stations successfully deployed under the new Offering 7 DCFC make ready investment program.

**Q13. Do the modifications to Offerings 7, 8, and 9 result in a change to the overall program budget?**

A13. No. The Company is proposing to fully utilize the same program offering budgets identified in direct testimony and outlined in Table 1 below.

*Table 1: ACE's Revised Estimated Program Costs*

Program Category	#	Offering Name and Description	Enrollment	Est. Budget (\$000s)
Residential	1	Whole-house TOU Rate	Unlimited, 300 for budgeting purposes	\$120
	2	Off-Peak Charging Incentive	300 customers	192
	3	Residential Rebate/Managed Charging	1,500 customers	3,396
Commercial	4	Multi-Dwelling rebate, demand charge offset	200 chargers; 65 locations	1,804
	5	Workplace rebate, demand charge offset	150 chargers; 30 locations	806
	6	Fleet L2 rebate, demand charge offset	150 chargers; 30 locations	806
Public Chargers	7	Make-Ready Public DCFC	Market driven	6,227
		Utility owned (last resort) DCFC	40 chargers	
	8	Make-Ready Public L2	At least 200 chargers	7,336

	9	Demand charge incentive	All new chargers installed under Offering 7 make ready program	2,420
Community Planning and Transit	10	Innovation Grant Fund	TBD	2,000
	11	Electric School Buses	20 buses and chargers	5,500
	12	NJ Transit bus depot electrification	est. 1 bus depot	2,500
Total Estimated Offering Costs:				\$33,107
Estimated Implementation and Admin Costs:				6,999
Consumer Education, Enrollment, and Outreach:				2,000
Total Estimated PIV Program Budget:				\$42,106

It is expected that due to the revised emphasis on make ready investments and the cost coverage of the make ready model, the anticipated number of chargers deployed under these offerings may increase significantly, even as the budget remains unchanged. To manage the make ready program and process applications, the Company will require a budget dedicated to make ready program administration. The Company's estimated implementation and administrative budget included approximately \$1.54 million for program management. Should this increase due to the expanded public make-ready programs, ACE will allocate the incremental cost from Offerings 7 and 8.

**Q14. Does the Company propose to make any program-level modifications to other offerings?**

A14. No. The Company maintains Offerings 1-6 and 10-13 as described in direct testimony. As I detail in the section below, the Company does clarify some of the offerings to address comments and recommendations from other parties on how those offerings will work in practice.

1       **II.     The Company's Clarifications on Program Offerings to Address Parties' Direct**  
2       **Testimony**  
3

4       **Q15.   Regarding Offering 2, ChargePoint Witness Miller recommends a modification to**  
5       **allow customers an option to participate utilizing embedded metering technology**  
6       **within an approved EVSE (P26 line 3 – P27 line 2). Please comment.**

7       A15.       Offering 2 allows current PIV drivers with existing EVSEs to participate in off-peak  
8       charging rates through a connected car (C2) device. Since the filing of direct testimony in  
9       December 2019, ACE has gained awareness of alternative technologies that offer solutions  
10      similar to C2 devices, such as platforms that allow for awareness of driving behavior through  
11      vehicle telematics. It is not ACE's intent to limit this Offering to a single technology if the  
12      data can be obtained in an alternative manner. As such, ACE proposes to modify Offering 2  
13      to be competitively sourced for multiple technologies that are cost-effective and can be  
14      achieved within a budget on the Offering's current scale.

15      **Q16.   ChargePoint Witness Miller recommends modifications to Offerings 3, 4, 5 and 6 to**  
16      **allow for customers and sites hosts to have the ability to choose from multiple vendors**  
17      **of EV charging network software (P27 line 3 – P31 line 12). Please comment.**

18      A16.       ACE agrees with Witness Miller's recommendations. As the EVSEs in these  
19      categories will be owned and operated by the customers, the customers should have their choice  
20      of qualified hardware and software platforms that they will select. ACE expects the  
21      competitive sourcing and prequalification process during program implementation will lead to  
22      multiple qualified vendors from which customers can choose. For program support and to  
23      ensure consistency in data collection, ACE may seek a software platform to retrieve customer  
24      charging data.

**Q17. Witness Miller recommends additional modifications for Offerings 5 and 6 (P29 line 15 – P30 line 19). Please provide the Company’s approach to these recommendations.**

A17. In his testimony, Witness Miller notes the financial challenges commercial customers face regarding workplace and fleet charging. Depending on the age of the facility where EVSEs are to be installed, such make-ready work can be extensive and costly, thus being prohibitive to deploying workplace and fleet charging in New Jersey. The workplace and fleet commercial sectors will be instrumental in helping the state to reach its light-duty Zero Emission Vehicle goals by 2025. Should the BPU agree that make-ready for workplace and fleet are prudent for the Company’s program, ACE recommends a ceiling for these incremental costs to a maximum of \$30,000 per site.

**Q18. Please summarize ChargePoint Witness Miller’s comments and recommendations for regarding hardware and software choice of utility owned and operated charging stations.**

A18. Similar to his recommendations for Offerings 3 – 6, Witness Miller recommends that the ACE be required to offer the hosts with a choice of both the utility owned and operated hardware and software to be utilized at a specific site.

**Q19. Does ACE agree that site hosts for utility-owned public EV charging stations should have the final decision on the type of hardware deployed on the site?**

A19. No. In the event that ACE deploys EV charging stations as the “owner of last resort,” the Company, as the owner and operator of the charging station, will make the final determination of the type of equipment to be deployed on a site. ACE maintains the hardware/equipment selection will be a coordinated process with the site host, with the Company selecting the appropriate charging solution at a given location.

1 **Q20. Describe the factors involved in selecting which hardware/equipment to deploy on a**  
2 **site?**

3 A20. ACE will take multiple considerations into account when choosing which EVSEs  
4 will be sited for public charging. These factors include the type of facility and parking  
5 space available, the dimensions of the parking space and the number of ports which can be  
6 fitted. ACE will coordinate this selection with all site hosts, whether the site be on  
7 commercial or government-owned property, taking the hosts preference and needs into  
8 account. Ultimately, as the party responsible for owning, operating and maintaining the  
9 charging station(s), ACE will choose the equipment most appropriate for the charging site  
10 and will retain the final decision.

11 **Q21. Witness Miller also recommends modifying Offerings 7 and 8 to require site hosts to**  
12 **determine the cost for drivers to use the utility-owned charging stations (P32 L13 –**  
13 **P33 L23). Do you agree with this recommendation?**

14 A21. No. Witness Miller outlines several options for site hosts to utilize in setting the  
15 pricing of charging stations including, but not limited to a fixed rate, energy rate, time of  
16 use rate as well as complementary usage. He also states “the operation and pricing of the  
17 charging station is a direct reflection of a site host’s goals for hosting that service: to attract  
18 drivers and encourage use of stations in a way that aligns with activities onsite.” While the site  
19 host is a valuable stakeholder in deploying EV charging, Witness Miller’s statement negates  
20 the fact that the site host is not the owner of the charging station, nor are they responsible  
21 for daily operations. Furthermore, under ACE’s proposed make-ready modifications to  
22 Offerings 7 and 8, a site host interested in maintaining full control of the EV charging  
23 stations will have ample opportunities to participate in make ready programs under

Offerings 7 – 9, where they will be responsible for setting the price for customers. As ACE proposed in its original petition, the price for Company-owned EV charging services will be based on prevailing market rates and approved by the BPU to prevent unfair or misaligned pricing with the market writ large.

**Q22. Tesla Witness Ehrlich notes the monthly set point incentive for (previous) Offering 9 is more appropriately delivered on-bill rather than off-bill as proposed by ACE (P17 line 17 – P18 line 5). Please comment.**

A22. ACE's proposed off-bill credit incentive is designed to reduce costs to the overall program. While an on-bill credit provides more convenience for EV charging providers, it would require expensive and lengthy upgrades to the Company's billing system, which would be excessive for a three-year pilot. Additionally, the Company can use the same vendor to deliver the set point incentive that is selected to deliver off-bill credits and rebates for other Offerings in ACE's PIV proposal, minimizing costs. As EV adoption expands and if rate incentives are deemed necessary in future years, ACE may seek a longer-term solution to providing rate incentives directly on customers' bills.

**Q23. Does this conclude your Rebuttal Testimony?**

A23. Yes, it does.

**ATLANTIC CITY ELECTRIC COMPANY**  
**BEFORE THE**  
**NEW JERSEY BOARD OF PUBLIC UTILITIES**  
**REBUTTAL TESTIMONY OF MICHAEL T. NORMAND**  
**DOCKET NO. EO18020190**

1   **Q1.   Please state your name and position.**

2   A1.           My name is Michael Normand. I am the Manager of Rate Administration for  
3           Atlantic City Electric Company (“ACE” or the “Company”) and Delmarva Power &  
4           Light Company (“Delmarva Power”), in the Regulatory Affairs Department of Pepco  
5           Holdings, LLC (“PHI”). I am providing this Rebuttal Testimony on behalf of ACE.

6   **Q2.   Did you previously submit testimony in this case?**

7   A2.           Yes, I previously submitted Direct Testimony.

8   **Q3.   What is the purpose of your Rebuttal Testimony?**

9   A3.           First, I will provide an update to the Company’s Plug-In Vehicle (“PIV”)  
10          Program as detailed in Company Witness Schatz’s Rebuttal Testimony, and provide an  
11          update to Offering 1, Whole House Time-of-Use (“TOU”) Rate, and Rate Schedule  
12          Residential Service – Plug-In Vehicle Charging (“RS-PIV”). Next, I will address  
13          portions of the Direct Testimonies of:

- 14               • ChargePoint’s Witness Miller;
- 15               • Tesla’s Witness Ehrlich;
- 16               • Natural Resources Defense Council, Environment New Jersey  
17               (“Environmental”) Witness Harris;
- 18               • Electrify America Witness Shah;
- 19               • EVgo Services Witness Dumit; and
- 20               • Division of Rate Council (“DRC”) Witness Peterson.



1     **Q4.     How is your Rebuttal Testimony organized?**

2 A4. First, I address an update to the Company's PIV Program Offering 1 on-to-off  
3 peak ratios, and how the Company's proposed program aligns with the recent New  
4 Jersey Board of Public Utilities' ("Board's") Order dated September 23, 2020 in  
5 Docket No. Q20050357. Second, I will address a theme discussed by many of the  
6 intervening charging companies and/or advocates ("EV intervenors", including Evgo,  
7 Tesla, ChargePoint, Electrify America, Natural Resources Defense Council) regarding  
8 a new permanent rate that addresses demand charges. Third, I will address DRC  
9 Witness Peterson separately from the EV intervenors pertaining to Witness Peterson's  
10 comments regarding cost recovery, cost allocation, and rate design. Finally, I will  
11 conclude my Rebuttal Testimony by summarizing the Company's position regarding  
12 the PIV program.

**Update to Company's PIV Program**

**14 Q5. Please describe the update to the Company's PIV Program.**

15      A5.            As described in the Rebuttal Testimony of Company Witness Schatz, there are  
16                    a few changes being proposed to the Company's PIV program. The changes regard  
17                    the following Offerings:

- 18 • Offering 7 Utility-owned Public DCFC charging (Rate Schedule “PC-PIV”)  
19 • Offering 8 Utility-owned Public L2 Charging (Rate Schedule “PC-PIV”)  
20 • Offering 9 Non-utility-owned public chargers (Rider “NUOPDCFC”).

1   **Q6.   Please detail the proposed changes to the Company's Offerings 7, 8, and 9.**

2   A6.           Offering 7 is changing to include all the "make-ready" investment included in  
3           Offering 9. This is for 30 sites with a maximum of 4 chargers per site (120 total).  
4           Therefore, Offering 7 will now include make-ready incentives for 165 chargers of  
5           which 40 would be utility owned. This does not impact the overall cost recovery as  
6           this is shifting dollars between Offerings. There is \$1.65 million in the Company's  
7           budget for Offering 9 that would be transferred to Offering 7. In other words,  
8           Offering 9's budget is being reduced by \$1.65 million and Offering 7's budget is  
9           increasing \$1.65 million. This implies that Offering 9 now only consists of the set  
10          point rebate. Offering 9 still contains the same site and charger limitations in the  
11          Company's direct filing for the amended petition (30 sites, 4 chargers per site). This  
12          ensures that a single site does not utilize the majority of the set point budget, which is  
13          discussed further within my testimony.

14               The change to Offering 8 is that the Company is not proposing ownership of  
15          L2 charging. The Electric Vehicle Supply Equipment ("EVSE") ownership and  
16          installation is currently \$2.3 million of Offering 8's budget. The Company proposes  
17          to leave the overall capital budget unchanged (\$6,766,700, Schedule (MTN)-3 page 3  
18          of 12). However, the \$2.3 million for utility ownership and installation will be spent  
19          on make-ready work for non-utility owned L2 charging. Therefore, there will not be  
20          any L2 charging revenues incorporated as a reduction to the PIV program regulatory  
21          asset. Additionally, this implies that the L2 charging rate in rate schedule "PC-PIV"  
22          would be removed and L2 charging would not be contained in that rider.

1           The changes above have been incorporated into Schedule (MTN-R)-1 which is  
2           an update to Schedule (MTN) – 1 and 3.

3   **Q7. Does the Company’s proposed PIV program align with the recent Board Order**  
4   **in Docket No. Q20050357?**

5   A7.           Yes. This includes “Cost-Recovery” portion of the distribution system as  
6           detailed on page 6 of the Order:

7  
8           Utility Cost Recovery  
9           Comments from stakeholders regarding utility cost recovery  
10          maintained that the Board should take a flexible approach and  
11          consider the broad-based benefits that EV charging infrastructure  
12          delivers to the entire state. Multiple stakeholders called for a flexible  
13          approach and maintained that limiting cost recovery may limit  
14          utility participation. Some commenters requested that the Board  
15          permit full and timely cost recovery for all costs associated with  
16          utility programs. In addition, they stated that cost recovery should  
17          include a return on, and of, all capital investments. A  
18          suggested mechanism was that revenues received from the use of  
19          utility-owned chargers could be credited back as an offset of  
20          program costs.

21  
22          Response  
23          Staff agrees that EDCs may recover costs that are permitted by the  
24          overall policy and encourages each EDC to file their own cost-  
25          recovery proposal. Staff also agrees that any revenues earned should  
26          offset program costs.

27  
28          And on page 10 regarding demand charges (the Company’s  
29          Offerings 4, 5, 6, and 9), “Staff agrees that demand charges are an  
30          obstacle to EV adoption, and this Board Order requires that EDC  
31          filings include a proposal to address how to minimize the barriers to  
32          EV adoption created by demand charges.” Last, staff directly  
33          references the set-point solution on page 23 as a “temporary  
34          solution” to address demand charges.

35  
36

1    **Q8.    Please discuss the update to the Company’s proposed Whole House Time-of-Use**  
2    **Rate.**

3 A8. Schedule (MTN-R)-2 provides an update to the analysis used in developing  
4 the on-to-off peak ratios utilizing actual data from ACE's sister company, Pepco. This  
5 update utilizes calendar year 2019 data and excludes holiday's falling on weekdays.  
6 Whereas my Direct Testimony utilized calendar year 2018 data and included  
7 holiday's falling on weekdays. The updated on-to-off peak ratios are 2.9 times for  
8 summer and 3.6 times for winter. This update is also reflected in the Company's  
9 proposed tariff and is detailed in Schedule (MTN-R)-3.

10 EV Intervenors

11 **Q9. Please describe the organization of the EV Intervenor's section of your testimony.**

A9. There are six (6) EV intervenors. Each of which make various comments and concerns regarding the Company's PIV Program proposal. I intend to rebut only the comments made regarding rate design, rate structures (demand charges, Time-of-Use ("TOU") volumetric charges), marginal cost pricing, and other comments provided by the EV intervenors. I will not address any comments regarding the modification of the Company's proposal regarding off-bill rebates, make-ready or charging equipment rebates. I intend to summarize their recommendations individually and address each of the EV intervenors in the section below.

**Electrify America – Witness Shah**

**Q10. On page 12 and 13 of Witness Shah's Direct Testimony, he provides comments regarding demand charges having a disproportionate impact on lower load factor services such as EV charging station operators, do you agree?**

A10. No, I do not. Specifically, I disagree with his testimony regarding the disproportionate impact. Demand charges send the appropriate price signal to customers on the costs they impose on the distribution system based on the load of the customer. Lower load factor customers are more expensive to serve compared to higher load factor customers therefore, demand charges may be more appropriate.

**Q11. Can you please explain load factor in more detail?**

A11. Yes. Load factor is the ratio of a customer's average demand to their peak demand. It can be calculated on an annual basis by summing a customer's annual energy usage divided by 8,760 hours divided by the customers hourly peak demand. Load factor can be calculated for a given time period, for example monthly or annually. It represents the efficiency of load. In other words, a low load factor customer has very high peak demand compared to their average demand. Where a *unity load factor* (load factor of 1.0) represents a customer with a constant demand.

Regarding the implications to imposing costs on the system, low load factor customers are expensive because the utility is required to install distribution capacity to meet a low load factor customers peak demand even though that peak demand is only realized a few hours in the year. Whereas a unity load factor customer generally utilizes the capacity installed to serve them throughout the year. Low load factor

1 customers are not a new concept and most Commercial and Industrial (“C&I”) rate  
2 schedules include a mix of customers with high and low load factors, and this is true  
3 for ACE.

4 **Q12. Please explain why you state that demand charges may be more appropriate for**  
5 **low-load factor customers.**

6 A12. Demand charges send the price signal to customers on the loads they impose  
7 on the distribution system over the long-run and thus the amount of distribution  
8 capacity required to serve customers. Distribution assets are primarily designed to  
9 meet localized non-coincident peak loads. This is especially true as you get closer to a  
10 customer’s premise, for instance distribution line transformers. Using Witness Shah’s  
11 example on page 16 of his Direct Testimony, a charging site could impose a load of  
12 1,000 kW which is a significant load that ACE would likely have to maintain capacity  
13 to serve that load.

14 **Q13. Would the elimination of demand charges help the economics of EV charging?**

15 A13. Yes. However, if the EV charging stations would be permitted to remain on  
16 existing C&I rate schedules, and if either (1) the demand charges were eliminated or  
17 (2) the demand charge component were to be converted to a kilowatt-hour volumetric  
18 rate, this would create intraclass subsidies borne by other customers within the class.  
19 This is because the EV charging customers would be imposing significant load on the  
20 distribution system but paying a class average volumetric rate. As outlined above, the  
21 lower-load factor customers have much lower kilowatt-hour sales compared to higher

1 load factor customers. Additionally, the kWh the lower load factor customers use bear  
2 little resemblance to the costs they impose. The higher load factor customers would  
3 therefore be subsidizing the lower load factor customers.

4 **Q14. Do ACE's current C&I rate schedules have significant demand charges?**

5 A14. Tariffs have demand charges in alignment of costs to serve. Currently, the  
6 primary rate schedules and their rate structures for ACE are:

- 7 • Monthly General Service Secondary – Customer charge, demand charge,  
8 and volumetric kWh charge;
- 9 • Monthly General Service Primary – Customer charge, demand charge, and  
10 volumetric kWh charge;
- 11 • Annual General Service Secondary – Customer charge and demand  
12 charge; and
- 13 • Annual General Service Primary – Customer charge and demand charge.

14 As noted above, 2 of ACE's major C&I rate schedules, both Monthly General  
15 Service ("MGS") Classes, are a three-part rate that already include a kWh volumetric  
16 charge. More importantly, the MGS classes current rate structure recovers most of  
17 their non-customer charge revenue through their volumetric charges, and the demand  
18 charge portion of the rate structure is rather small. Below details the percentage of  
19 revenue that is generated for each of the MGS classes from the demand charge versus  
20 the kWh charge (excludes reactive demand):

- 21 • Monthly General Service Secondary
  - 22 ○ Demand Charge – 17%
  - 23 ○ Volumetric Charge – 83%

- Monthly General Service Primary

- Demand Charge – 14%

- Volumetric Charge – 86%

Given this information, I would not consider these classes to have significant demand charges. The Annual General Service (“AGS”) rates schedules, however, do have significant demand charges. Both AGS Secondary and Primary rate schedules recover over 95% of their class revenues from the demand charge.

**Q15. On page 15 of Witness Shah’s Direct Testimony, he disagrees with the time-limited setpoint approach. Do you have any comments?**

A15. Yes. The Company’s 5-year PIV Program for all Offerings that address demand charges (Offerings 4, 5, 6, and 9) are to put a constraint on the subsidies borne by ACE customers. The Company is hopeful that this time horizon will help the early stage of the EV charging market where utilization is likely to be low to a future state where utilization will be much higher and demand charges will be a much less significant barrier. However, while ACE does not propose extending the PIV program, at a time near the end of the PIV program there should be an opportunity to evaluate the status of the EV charging market and PIV adoption, and determine if an extension of any particular Offering is warranted. This would have to be discussed amongst all the New Jersey stakeholders.

**Q16. Please comment on Witness Shah’s remarks that the set point may not allow sufficient “headroom” for an EVSE infrastructure company.**

A16. The Company’s setpoint proposal is not intended to set the overall cost of electricity so low that it guarantees that all EVSEs will be profitable. The intention is



1 to help bridge the gap between the current low utilization state to a period of higher  
2 utilization. Witness Shah does admit on page 17 lines 14-17 that ACE's set point  
3 proposal does provide cost certainty in initial years for very low load factor charging  
4 infrastructure.

5 **Q17. Do you have comments regarding Witness Shah's example on pages 17 line 24**  
6 **and 18 lines 1-9 of his Direct Testimony?**

7 A17. Yes. Rate design is not a precise tool that can be used to develop  
8 individualized rates for each customer and their unique usage characteristics, which  
9 he somewhat recognizes on lines 5 and 6. ACE designs rates generally for  
10 homogenous groups of customers, or service classifications, where costs are allocated  
11 to service classifications on the basis of cost causation and in turn the rates are  
12 intended to send cost-based price signals. As mentioned earlier, ACE generally  
13 designs the system to meet localized load, which is reflected by non-coincident peak  
14 demand, and thus cost-allocation for demand related investment, and the recovery of  
15 these demand costs are recovered through non-coincident demand charges.

16 In his particular example, the two 350 kW chargers on the same charging  
17 network under one meter may be utilized on a coincident basis, and thus may not be  
18 cut in half. Instances like this are why 15-minute intervals are used to more accurately  
19 capture the instances of the time periods where demand can spike. Similarly, the two  
20 adjacent 350 kW charges under separate meters may have charging session that do  
21 occur at the same time. The coincidence or lack thereof of these loads is known as

1 diversity. Diversity is recognized in the allocation of substations and primary plant to  
2 customer classes and thus is reflected in the revenue requirement and ultimately the  
3 rates for each service classification.

4 **Q18. Do you have comments regarding Witness Shah's interpretation of ACE's MGS**  
5 **Secondary tariff regarding the Demand Determination for Billing provision?**

6 A18. Yes. As set forth in BPU NJ No. 11 Seventh Revised Sheet No. 13, the  
7 specific provision Witness Shah references are for customers where a demand meter  
8 is not installed, in other words an unmetered customer. This is a tariff provision for  
9 circumstances where a demand meter is not installed for a particular customer.  
10 However, not installing a meter for a typical MGS customer is not a representative  
11 situation. It would be inappropriate to simply choose not to install a demand meter for  
12 an EV charging station to simply avoid paying the full demand charge. The MGS  
13 Secondary class average billing demand per customer from the last base rate case is  
14 about 9 kW per customer. An EV charging customer as Witness Shah details on Page  
15 16 can have a potential load of 1,000 kW or 111 times the average MGS Secondary  
16 class billing demand of 9 kW.

17 **Q19. Please comment on Witness Shah's proposal regarding a permanent EV rate**  
18 **based upon marginal costs and the effective level of electricity rates on page 20?**

19 A19. While ACE believes the existing C&I rate schedules, as approved by the  
20 Board, reflect cost-based rates appropriate for ACE's customers including EV  
21 charging companies, the Company is not opposed to discussing other options.  
22 However, I would disagree with Witness Shah's recommendation to base the EV  
23 charging rate upon marginal costs.

1           Although marginal costs are theoretically sound, the industry has largely  
2 moved away from marginal cost pricing for distribution utilities in favor of embedded  
3 costs. To simply apply marginal cost pricing to one subset of customers while pricing  
4 all other customers on embedded costs is not appropriate, as the basis of costs is  
5 different. This is especially true given that EV charging is likely to grow significantly  
6 over the years to come; and EV charging stations will represent an increasing  
7 proportion of the utility customer base.

8           Further, Witness Shah states on page 20, lines 13-17:

9           The approved rate or incentive should result in effective electricity  
10 rates for public electric vehicle charging infrastructure that are  
11 commensurate with, if not lower than, those for residential  
12 charging in order to create equitable incentives for adoption  
13 electric transportation amongst those that have access to charging  
14 at home and those that do not.  
15  
16

17           Though I understand Witness Shah may be focused toward the end user of EV  
18 charging, this statement does not bear any relation to distribution costs and thus cost-  
19 based rates. Typically, residential customers are the most expensive to serve and  
20 correspondingly commercial C&I secondary, primary, and transmission customers are  
21 less expensive on an equivalent \$/kWh basis. To achieve cost parity for all EV  
22 charging one would have to disregard cost causation and cost-based rates.  
23 Additionally, using a residential charging rate at home may not be the appropriate  
24 barometer as residential classes typically have lower average rates of return and the  
25 level of residential rates include subsidies.  
26

**ChargePoint – Witness Miller**

**Q20. Do you have any comments regarding claims made on the demand charges and their impact on EV charging stations Witness Miller makes on pages 40 and 41 of his Direct Testimony?**

A20. Yes, ACE disagrees with many of his claims and these have already been addressed in this rebuttal testimony pertaining to the rebuttal of Witness Shah.

**Q21. Witness Miller claims that the setpoint ignores the root causes of unsustainable demand charges, inappropriately regulates Direct Current Fast Charging (“DCFC”) services, and provides discriminatory relief to demand charges, do you agree?**

A21. No. ACE disagrees with the notion of unsustainable demand charges. Again, this is largely addressed in my rebuttal pertaining to Witness Shah. The major issue is the current state of low utilization. The setpoint subsidy is temporary and should not remain in effect in perpetuity. Witness Miller is suggesting that a permanent rate structure, that inherently will be a subsidized rate borne by other ACE customers, should be established. First, the precedent this could establish if approved, whereby developing rates for customers to subsidize new technologies, is worrisome and should be avoided.

Second, ACE has not stated nor given the intent to regulate DCFC third-party charging. The setpoint is simply a subsidy mechanism that “slides” with utilization that can assist EV charging companies with the risk of initial investment and periods of low utilization.

1           Last, regarding the discriminatory demand relief, as described earlier in my  
2           Rebuttal Testimony, making Offering 9 only available to new customers is to achieve  
3           the policy goal of further developing EV charging infrastructure. By opening up  
4           Offering 9 to existing customers and removing any site or number of charger  
5           limitations is problematic. Removing site and number of charger limitations, would  
6           allow a third-party EV charging Company to install a large amount of charging  
7           capacity on a single site and thus the level of that site's subsidy could be  
8           disproportionally large. By including site and charger limitations, it ensures that the  
9           setpoint subsidy is somewhat limited and also helps to build out more EV charging  
10          infrastructure (geographically). ACE does not wish to allow a single site-host to  
11          invest in a single large site that receives disproportionately large subsidies.

12           Additionally, ACE is not required to subsidize DCFC installed in low volume  
13          corridors as Witness Miller states on page 42 lines 12-14. The intent of the Offering 9  
14          subsidy is not to ensure that every EV charging station will be profitable nor should it  
15          be. This is why ACE believes utilities have a place in owning EV charging.

16      **Q22. Please comment on the examples of other utilities rate design solutions Witness**  
17      **Miller details on pages 44 and 45 of his Direct Testimony.**

18      A22.           Many of these examples are not permanent rate design solutions, but  
19          temporary rate solutions much like ACE's PIV program Offerings 4, 5, 6, and 9. In  
20          particular, the Connecticut Eversource rate which converts the demand charges to an  
21          equivalent \$/kWh is problematic. This would have the EV customers pay an average  
22          kWh rate and avoid the demand charge. Inherently, the EV charging customers would  
23          also be avoiding a majority of the costs they impose on the system, and that would be

1 borne by the other customers within that customer class. I am not sure of the specifics  
2 in the development of that rate or the decision to determine it, however, it is not a  
3 source to be used for development of a permanent rate solution.

4 **EVgo – Witness Dumit**

5 **Q23. Please summarize EVgo Witness Dumit’s comments regarding rate reform on**  
6 **pages 15 and 16 of her Direct Testimony.**

7 A23. Witness Dumit posits starting on page 15 line 18 that “a better way to ensure  
8 rate reform is successful and sustainable is to leverage existing rate designs that have  
9 been approved and are underway across many utility services territories.” and  
10 continuing on line 21, “Such tariff structures that seek to minimize kilowatt (“kW”)  
11 demand charges, in favor of volumetric charges and are applied to both existing and  
12 new DCFC investments offer significant market development potential.”

13 **Q24. What comments do you have?**

14 A24. I have addressed Witness Dumit’s comments regarding demand charges and  
15 volumetric rates in my Rebuttal Testimony of Witness Shah. I would add that the  
16 Company’s current proposal for Offerings 4, 5, and 6, the demand charge credit, has  
17 been structurally approved in the Maryland jurisdiction for Baltimore Gas & Electric,  
18 Potomac Electric Power Company, and Delmarva Power & Light. Additionally,  
19 simply because another jurisdiction has approved a tariff or rate design for EV  
20 charging does not imply that ACE would fundamentally agree with any tariff / rate  
21 structure in another jurisdiction. Please see Schedule (MTN-R)-4 for the Company’s

1 rate design principles which include discussion on demand and volumetric charges. I  
2 also address Witness Dumit's example provided on Page 16 lines 3-6 of Eversource's  
3 EV rider in my Rebuttal Testimony to Witness Miller in response to question 23.

4 **Tesla – Witness Ehrlich**

5 **Q25. Please summarize Tesla Witness Ehrlich's comments.**

6 A25. Witness Ehrlich recommends

- 7 • On Page 14, should be available to all separately metered charging stations  
8 including new and existing sites and that there be no limits on the number of  
9 chargers or sites<sup>1</sup> and that the limit should be the budget of \$2.420 million;  
10 • On Pages 15 and 16 – That the set point \$0.20 / kilowatt-hour ("kWh") is  
11 arbitrary and should be priced utilizing the commercial rate schedules demand  
12 component priced on an equivalent kilowatt-hour basis, and recommends  
13 \$.1384 / kWh based on year-end 2018 data; and  
14 • On Page 17 – he suggests a demand charge credit for third-party DCFC be  
15 based on 50% of the billed demand rather than the charger nameplate.

16 **Q26. What are your comments regarding Witness Ehrlich's comments and**  
17 **recommendations?**

18 A26. Regarding Witness Ehrlich's first comment, the Company's PIV Program is  
19 focused on the development of new EVSE infrastructure. This is to achieve New  
20 Jersey's policy goal of further developing EVSE infrastructure. The major concerns  
21 of the Company were (1) to recognize that limits had to be placed on the subsidies as

---

<sup>1</sup> Regarding limits of chargers and sites, it is more clearly outlined on Page 6 of Witness Ehrlich's Direct Testimony

1 all ACE customers will bear the burden of paying for those subsidies and (2) that by  
2 opening the Company's offerings to existing EVSE sites may be the majority of  
3 subscribers to ACE's Offerings.

4 As an example, the Company's proposal regarding Offering 9 was 30 sites  
5 with a set point budget of \$2.4 million. If this Offering were available to both existing  
6 and new sites, there is a potential that existing sites would take up almost all of the 30  
7 sites. That would not achieve New Jersey's policy goal of further developing EVSE  
8 charging infrastructure. Additionally, since this is a subsidy paid for by other ACE  
9 customers a budget or maximum is established to limit the burden on those  
10 customers. ACE's choice to make this Offering as well as the demand charge credit  
11 Offerings 4, 5, and 6 available to new EVSE investment is to focus on achieving New  
12 Jersey's policy goal of further developing EVSE infrastructure. Also, this issue is  
13 raised by Witness Miller and I address why there are limitations to the specific  
14 number of sites and chargers per site in response to question 23 within my Rebuttal  
15 Testimony.

16 **Q27. Please provide comments regarding Witness Ehrlich's recommendations on the**  
17 **level of the set point \$0.20 per kWh.**

18 A27. The level of the set point as detailed in response to data request CP-022 is  
19 determined by considering the overall equivalent cost of gasoline of approximately  
20 \$0.37 per kWh and the specific economics of DCFC site hosts. The equivalent cost of  
21 gasoline is important because electric vehicle charging cost should be less than the  
22 equivalent cost of gasoline. Additionally, the set point is a new mechanism and must  
23 be studied. The EV intervenors that do accept Offering 9 either as is or modified,



1 would likely prefer the set point to be established lower in order to increase the value  
2 of the subsidy provided. The other argument is to establish the set point higher to  
3 minimize the subsidy and the impact of the cost paid for by other ACE customers.

4 The intention of the set point is not to set the cost of DCFC, but to recognize  
5 that demand charges are a current challenge largely due to low utilization. The  
6 Company does not believe there is a “demand charge problem.” The setpoint is an  
7 innovative mechanism that will either increase or decrease based on the site’s  
8 utilization. Sites that continually have lower utilization will receive a higher subsidy  
9 compared to sites with much higher utilization (for comparable sites). As utilization  
10 increases and the site profitability increases, the subsidy decreases; and in-turn the  
11 subsidy paid by other ACE customers also decreases for the higher utilization sites.

12 **Q28. Please comment on the demand charge credit applicability to nameplate capacity**  
13 **versus billed demand.**

14 A28. The intention of the demand charge credit is not to provide a subsidy / credit  
15 for load that is not directly associated with providing charging. Its sole purpose is to  
16 assist the current economic state of low utilization until higher levels of utilization  
17 can be achieved. Therefore, the credit is only applicable for the demand associated  
18 with the nameplate capacity. More specifically regarding Offerings 4, 5, and 6, the  
19 native load (load not related to charging) should not be discounted and subsidized by  
20 other ACE customers. The goal of the PIV program is to further develop EVSE  
21 charging and not to subsidize demand that is not directly related to charging.

22

1        **Natural Resources Defense Council / Environment New Jersey – Witness Harris**

2        **Q29. Please summarize Environmental Witness Harris' comments.**

3        A29.            Overall, Witness Harris on page 3 recommends that ACE's PIV Program  
4                        should be approved with modifications. Additionally, she recommends that the Board  
5                        approve Offering 1 and 2 on page 27 lines 10 and 11 of her Direct Testimony. I will  
6                        summarize comments regarding Offerings 4, 5, and 6 below:

- 7                        • Page 28 of her Direct Testimony – comments that long-term sustainable  
8                        solutions rather than short-term “fixes” should be considered and to develop  
9                        rates that more accurately reflect the unique characteristics and costs of EV  
10                        charging rather than forcing stations to take service on C&I rates designed for  
11                        large buildings and factories;
- 12                        • Page 29 and 30, Rates should promote efficient use of fixed system resources,  
13                        which will reduce rates for all utility customers, Rates should be easy to  
14                        understand and predictable, Rates should be designed with end users in mind;  
15                        Time-varying volumetric rates are generally preferable to demand charges,  
16                        Non-coincident peak demand charges should generally be avoided, It may be  
17                        appropriate to set rates to recover marginal costs rather than embedded costs;  
18                        and, Programs that rely on price signals inherent in rate design to deliver grid  
19                        and user benefits should ensure users actually see those price signals; and
- 20                        • Page 30 - Synapse recommends time-of-use energy charges or critical peak  
21                        pricing over coincident demand charges for recovering the costs of shared  
22                        infrastructure, since energy charges better capture the duration of time that a  
23                        customer is using that infrastructure.

**1 Q30. What is your response to Witness Harris' comments?**

2 A30. The Company's proposed PIV program is indeed temporary, but that is  
3 intentional. Permanent subsidized rate structures should not be established, and the  
4 Company believes the appropriate price signal for EV charging customers like all  
5 other commercial and industrial customers include a demand charge. As pointed out  
6 in the rebuttal to Witness Shah, costs on a distribution system largely do not vary with  
7 TOU volumetric usage. This is especially true for low-load factor customers. Where  
8 TOU rates are utilized they are utilized to achieve a desired result in customer  
9 behavior. For example, the Company's proposals for Offerings 1, 2, and 3 regarding  
10 the whole-house TOU rate and \$0.05 off-peak incentive. Moreover, residential  
11 customers do not have a history of demand charges and thus other solutions to  
12 encourage off-peak charging are appropriate for the residential customer class. Please  
13 see Schedule (MTN-R)-4 regarding the Company's rate design principles.

**14** **DRC Witness Peterson**

15     **Q31. What are DRC Witness Peterson's comments regarding Offering 1 – Whole**  
16     **House TOU Rate on pages 8 and 9 of his Direct Testimony?**

17 A31. His main contention is that the metering cost and allocation of the regulatory  
18 asset to all residential customers is inappropriate and does not follow cost causation  
19 and rate design principles.

20 Q32. What are your comments regarding his criticisms for Offering 1?

21 A32. While I generally agree, there are many instances where a customer class is  
22 allocated costs for which only a portion of the customer base are the cost drivers. This

1 is not a new issue in ratemaking. The challenge is maintaining a balance between  
2 reflecting costs and not creating a plethora of service classifications.

3 I am not opposed to establishing either (1) a separate customer charge or a  
4 separate residential service classification for Offering 1. However, I hesitate to do so if  
5 the number of customers remains immaterial. For instance, I do not want to establish a  
6 new service classification for 10 customers. I am not suggesting that is the subscription  
7 ACE expects for Offering 1, but more simply that there are numerous items that need  
8 to be taken into consideration. Typically, service classifications with very few  
9 customers have unique characteristics like being served from high-voltage facilities.

10 Last, I would say that ACE is planning to implement Advanced Metering  
11 Infrastructure (“AMI”) and the cost differences to setup a meter to read intervals is  
12 minimal.

13 **Q33. On page 9 Witness Peterson raise the same issue with Offerings 2 and 3, please**  
14 **comment.**

15 A33. Similar to my comments before, there are many considerations. One could  
16 create a new rate class, but as can be seen only these two offerings would triple the  
17 number of residential service classifications. I do not view this as practical.  
18 Additionally, it does not make sense for these customers to be in their own service  
19 classification and pay for the very rebates they are receiving. This would undo the  
20 purpose of the rebate. The rebates are \$0.05 for off peak charging **net** (emphasis added)  
21 of any on-peak charging. There is a disincentive to charge on-peak and an incentive to  
22 charge off-peak. Thus, the structure of the off-peak rebate in Offerings 2 and 3 was not  
23 designed to simply provide a credit for off-peak charging. This also should help to

1 reduce the residential customer class peak demand increases that EV charging may  
2 impose on the residential class and thus help mitigate potential increases in capacity  
3 related plant allocations.

4 **Q34. On Pages 9 and 10 Witness Peterson comments on the appropriateness of the**  
5 **allocations in Offerings 7, 8, 10, 11, and 12 to the residential class, what are your**  
6 **comments?**

7 A34. The Company's PIV program cost recovery proposal was intended to be a  
8 proposal with estimated impacts. Detailed cost allocation would be done in a more  
9 detailed manner and explained in the context of a base rate case proceeding.

10 Regarding Offerings 7 and 8 these are utility-owned public charging stations.  
11 Much like gas stations, residential customers along with commercial customers can  
12 utilize the Company-owned public charging stations. Additionally, the revenues from  
13 these stations are to be a reduction to the PIV program regulatory asset. To exclude the  
14 residential class would not reflect cost-causation.

15 Offering 10 is an innovation fund that include ideas like car sharing. This  
16 Offering may include investments that are focused toward residential customers. To  
17 exclude the residential class in the allocation would not be appropriate. I included the  
18 residential class allocation for this offering and Offerings 11 and 12 to be conservative  
19 and show the potential bill impact on the residential class. To exclude the residential  
20 class in my opinion would have been overly simplistic and would have been  
21 disingenuous on the potential bill impact of the PIV program to the residential class.

22 Offerings 11 and 12 are the school bus and New Jersey transit offerings. These  
23 offerings provide benefits to the communities that ACE serves, and these Offerings

1 provide services to the community from institutions that are not run as public entities  
2 (versus private entities).

3 **Q35. Witness Peterson alleges on pages 10 and 11 of his Direct Testimony that the**  
4 **Company will have some amount of double recovery do you agree?**

5 A35. No. Witness Peterson alleges double recovery related to two items proposed for  
6 recovery in the PIV program's regulatory asset. The first item relates to inclusion of  
7 operations and maintenance ("O&M") expenses described below and the second item  
8 relates to incremental depreciation expense.

9 Regarding O&M expenses in general, Witness Peterson correctly cites that they  
10 are recovered through base rates, however, he incorrectly alleges that the PIV program  
11 regulatory asset would double recover the O&M expenses. The PIV program regulatory  
12 asset's expenses are largely related to rebates and **incremental** O&M expenses. The  
13 incremental O&M expenses are not included in base rates and therefore there are no  
14 issues pertaining to double recovery of O&M expenses.

15 Second, he regards the inclusion of incremental depreciation in the PIV  
16 program regulatory asset and the capital closing to plant in service as double recovery.  
17 His claim is incorrect. The Company's proposal requests the entire recovery of the PIV  
18 program's associated costs. By including the incremental depreciation expense with a  
19 return in the regulatory asset, ACE is ensuring complete recovery of incremental capital  
20 costs. If the incremental depreciation expense was excluded from the regulatory asset,  
21 the Company would forego the recovery of some portion of the initial investment.

22 The following example illustrates the foregone recovery concept. If an asset  
23 were placed into service at 100 dollars with a 5-year straight-line depreciation, the

1 monthly depreciation would be approximately \$1.67 per month. The time from when  
2 this asset closed to plant in service and from when the Company sought recovery could  
3 present regulatory lag. Continuing the hypothetical example, perhaps 6-months of  
4 depreciation expense has passed. Therefore, the Company would propose an asset with  
5 a net plant balance of \$89.98 which would earn a return. By including the incremental  
6 depreciation with a return in the PIV program regulatory asset the Company proposes  
7 complete recovery of the incremental capital costs and no such alleged double recovery.  
8 This ratemaking treatment has been approved in other PHI jurisdictions, (e.g.  
9 Maryland, Delaware, and District of Columbia) relating to the cost recovery of  
10 advanced metering infrastructure capital investments.

11 Last, Witness Peterson's statement on page 11 starting on line 3 "...unit charge  
12 amounts for depreciation and O&M expenses included in base rates as applied to the  
13 incremental PIV-related kWh sales that provides some amount of cost recovery for the  
14 incremental depreciation and O&M expenses on incremental PIV-related capital  
15 facilities." This argument is misleading. The PIV program regulatory asset seeks to  
16 recover rebates, incremental depreciation expense, and incremental O&M expenses.  
17 These items are not being recovered through base rates since they are incremental to  
18 what is being recovered in base rates. The recovery of such costs can only be  
19 established through inclusion in the revenue requirement to set rates to recover the costs  
20 included in the revenue requirement. Additionally, the current rates for the residential  
21 class are subsidized by C&I classes and are not recovering their full cost of service,  
22 and any incremental sales would likely not recover the incremental revenue  
23 requirement including incremental O&M and depreciation expense.

1 ACE Rate Design Summary

2 **Q36. Can you please summarize ACE's position regarding rate design and ACE's rate**  
3 **design principles?**

4 A36. Yes. ACE's rebuttal testimony sets forth the Company's position on many  
5 items regarding rate design and the utilization of cost-based rates. ACE believes that  
6 the existing rate structures as approved by the Board are cost-based and send the  
7 appropriate price signals to customers, including EV charging customers. These rates  
8 are based on rate design principles which are detailed in Schedule (MTN-R)-4. This  
9 document is an Exelon Joint utility document that has been submitted in PHI's  
10 Maryland jurisdiction. This explains ACE's position on rate design principles for the  
11 design of rates.

12 **Q37. Please comment on the rate design aspects of ACE's PIV program.**

13 A37. ACE's PIV program intends to help New Jersey achieve its policy goal of  
14 further developing EV charging. ACE is in a unique situation in that it, like other  
15 EDCs, establishes base distribution rates for its customers. ACE must consider all of  
16 its customers and not only EV charging customers. ACE does not believe it should  
17 severely alter tariffs and rate design principles to ensure EV charging companies have  
18 enough "head room" to operate. EV charging companies are currently making  
19 investments even without permanent discounted EV rate structures or other rate  
20 subsidies.

21 That being said, ACE's PIV program does introduce subsidies to be borne by  
22 ACE customers, but these subsidies are temporary, transparent, and visible to all  
23 stakeholders. ACE's PIV program leaves the underlying cost-based rate structures



1 intact. There are other rates (RGGI and Other Clean Energy) established which are  
2 subsidized by all rate payers in New Jersey, and ACE's proposal is not new in that  
3 regard. The recent Board Order on page 10, states "Stakeholders acknowledged that  
4 demand charge waivers are neither a permanent nor long term solution but would  
5 provide time for the state to develop rebate methodology.<sup>2</sup>" ACE's proposed  
6 offerings (Offerings 4, 5, 6, and 9) to address demand charges are in line with the  
7 temporary solution as discussed in the Board Order, which is also a major concern of  
8 many of the intervening parties. Again, as stated elsewhere in this testimony, ACE's  
9 PIV program helps stimulate EV charging in the current low-utilization state until EV  
10 charging and PIV ownership is more ubiquitous.

11 ACE's PIV program has safeguards for ACE customers in that there is a  
12 proposed budget and there is a sunset provision of 5-years. There are unique  
13 Offerings that benefit different aspects of the charging market and customers  
14 (Residential and C&I) demonstrated in each of ACE's Offerings. The PIV program is  
15 intended to help New Jersey achieve the policy goal of significantly developing EV  
16 charging over the next 5-10 years.

17 **Q38. Does this conclude your Rebuttal Testimony?**

18 A38. Yes, it does.

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<sup>2</sup> The rebate methodology included discussion on the "setpoint".

# Schedule (MTN-R)-1

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
	Cost Component			Capital Costs	Regulatory Asset Costs	Estimated Total Cost	Total Cost to Residential Customers (\$)	Total Cost to Other Customers (\$)
(1)	Whole House TOU (Offering 1)			\$ 120,000.00	\$ 428,133.00	\$ 548,133.00	\$ 548,133.00	\$ -
(2)	Off Peak Charging Incentive (Offering 2)			\$ 24,000.00	\$ 1,037,156.00	\$ 1,061,156.00	\$ 1,061,156.00	\$ -
(3)	Residential Rebate/ Manage Charging Program (Offering 3)			\$ 1,875,000.00	\$ 4,273,883.09	\$ 6,148,883.09	\$ 6,148,883.09	\$ -
(4)	Multi-Dwelling Unit Charging (Offering 4)			\$ 167,500.00	\$ 2,635,102.00	\$ 2,802,602.00	\$ -	\$ 2,802,602.00
(5)	Workplace Charging (Offering 5)			\$ 118,750.00	\$ 1,519,528.00	\$ 1,638,278.00	\$ -	\$ 1,638,278.00
(6)	Fleet Charging (Offering 6)			\$ 118,750.00	\$ 1,519,529.00	\$ 1,638,279.00	\$ -	\$ 1,638,279.00
(7)	Public DCFC's (Offering 7)			\$ 5,824,200.00	\$ 1,032,633.00	\$ 6,856,833.00	\$ 3,088,975.34	\$ 2,117,857.66
(8)	Public Level 2 Charging (Offering 8)			\$ 6,776,700.00	\$ 1,787,633.00	\$ 8,564,333.00	\$ 5,080,464.37	\$ 3,483,868.63
(9)	Non-Utility-Owned Public Chargers (Offering 9)			\$ -	\$ 2,848,913.00	\$ 2,848,913.00	\$ -	\$ 2,848,913.00
(10)	Innovation Fund (Offering 10)			\$ -	\$ 2,000,000.00	\$ 2,000,000.00	\$ 1,188,118.38	\$ 811,881.62
(11)	Electric School Bus Fund (Offering 11)			\$ -	\$ 5,500,000.00	\$ 5,500,000.00	\$ 3,267,325.54	\$ 2,232,674.46
(12)	NJ Transit Bus Electrification (Offering 12)			\$ -	\$ 2,500,000.00	\$ 2,500,000.00	\$ 1,485,147.97	\$ 1,014,852.03
(13)	Total			\$ 15,024,900.00	\$ 27,082,510.09	\$ 42,107,410.09	\$ 21,868,203.68	\$ 18,589,206.40

Source: Refer to Lines (1) to (10) & (13) to (25) of "Class Weighting", Page 4 of 12

	Rate Impact Calculation - Residential	Reg Asset Amount	Capital Amount	Total
(14)	Levelized Annual Residential Revenue Requirement - Capital	\$0	\$986,270	\$986,270
(15)	Levelized Annual Residential Revenue Requirement - Reg Asset	\$3,056,115	\$0	\$3,056,115
(16)	Levelized Residential Revenue Requirement - Total	\$3,056,115	\$986,270	\$4,042,385
(17)	Annual kWh per Class	3,983,153,885	3,983,153,885	3,983,153,885
(18)	Rate (\$/kWh)	\$ 0.000767	\$ 0.000248	\$ 0.001015
(19)	Typical Monthly Usage	679.00	679.00	679.00
(20)	Cost Per Residential Customer Per Month	\$ 0.52	\$ 0.17	\$ 0.69

Source: Line (30) of "Cap Asset Amortization - Capital - Residential", Page 8 of 12.

Source: Line (31) of "Program Regulatory Asset Amortization - Residential", Page 9 of 12.

Calculation: Line (14) + Line (15)

Source: Line (1) of "As-Billed Billing Determinants", Page 6 of 12.

Calculation: Line (16) / Line (17)

Source: Page 3 of the 3/13/2019 Decision (BPU Docket No. ER18080925).

Calculation: Line (18) x Line (19)

ACE EV Filing - Reg Asset Cost Breakdown Analysis

Offering 1 - Whole House TOU

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(1)	Customer Enrollment and Outreach	Program Cost			\$ 428,133.00
(2)	Individual Offering Total				\$ 428,133.00

Offering 2 - Residential Off-Peak: Based On Vehicle Data

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(3)	Vehicle Charging Device	Program Cost	300	\$ 99.00	\$ 29,700.00
(4)	Systems Interfaces and Updates	Program Cost			\$ 417,000.00
(5)	Customer Enrollment and Outreach	Program Cost			\$ 428,133.00
(6)	Off Bill / Off Peak Incentive Delivered	Program Cost			\$ 162,323.00
(7)	Individual Offering Total				\$ 1,037,156.00

Offering 3 - Residential Managed Charging: Based On EVSE Data

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(8)	Home Assessment/Visit for Prequalification	Program Cost	1875	\$ 500.00	\$ 937,500.00
(9)	Rebate: New Smart Level 2 EVSE (50% of allowed costs)	Program Cost	1500	\$ 500.00	\$ 750,000.00
(10)	Rebate: Installation (50% of allowed costs)	Program Cost	1500	\$ 500.00	\$ 750,000.00
(11)	Systems Interfaces and Updates	Program Cost			\$ 450,000.00
(12)	Customer Enrollment and Outreach	Program Cost			\$ 428,134.00
(13)	Off Bill / Off Peak At Home Incentive Delivered	Program Cost			\$ 958,249.09
(14)	Individual Offering Total				\$ 4,273,883.09

Offering 4: Commercial - MDU (Multi-Dwelling Units - Condos, Apartments)

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(15)	Facility Assessment/Visit for Prequalification	Program Cost	83	\$ 800.00	\$ 66,400.00
(16)	Rebate: New Smart Level 2 EVSE (50% of allowed costs, w/ payment module & cell)	Program Cost	200	\$ 2,500.00	\$ 500,000.00
(17)	Rebate: Installation - (100% of allowed costs, up to \$10,000 max per site)	Program Cost	67	\$ 10,000.00	\$ 670,000.00
(18)	Systems Interfaces and Updates	Program Cost			\$ 402,000.00
(19)	Customer Enrollment and Outreach	Program Cost			\$ 428,133.00
(20)	Demand Charge Credit Incentive Delivered	Program Cost			\$ 568,569.00
(21)	Individual Offering Total				\$ 2,635,102.00

Offering 5: Commercial - Workplace (Charging For Employees)

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(22)	Facility Assessment/Visit for Prequalification	Program Cost	38	\$ 800.00	\$ 30,400.00
(23)	Rebate: New Smart Level 2 EVSE (50% of allowed costs, w/ payment module & cell)	Program Cost	150	\$ 2,500.00	\$ 375,000.00
(24)	Rebate: Installation - (no incentive for "make ready" or EVSE installation)	Program Cost	30	\$ -	\$ -
(25)	Systems Interfaces and Updates	Program Cost			\$ 285,000.00
(26)	Customer Enrollment and Outreach	Program Cost			\$ 428,133.00
(27)	Demand Charge Credit Incentive Delivered	Program Cost			\$ 400,995.00
(28)	Individual Offering Total				\$ 1,519,528.00

Offering 6: Commercial - Fleet (Charging For Fleet Vehicles)

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(29)	Facility Assessment/Visit for Prequalification	Program Cost	38	\$ 800.00	\$ 30,400.00
(30)	Rebate: New Smart Level 2 EVSE (50% of allowed costs, w/ payment module & cell)	Program Cost	150	\$ 2,500.00	\$ 375,000.00
(31)	Rebate: Installation - (no incentive for "make ready" or EVSE installation)	Program Cost	30	\$ -	\$ -
(32)	Systems Interfaces and Updates	Program Cost			\$ 285,000.00
(33)	Customer Enrollment and Outreach	Program Cost			\$ 428,134.00
(34)	Demand Charge Credit Incentive Delivered	Program Cost			\$ 400,995.00
(35)	Individual Offering Total				\$ 1,519,529.00

Offering 7: Public DCFC's

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(36)	EVSE Warranty	Program Cost	45	\$ -	\$ -
(37)	All Other Development Costs (signage, lighting, bollards, landscaping, etc)	Program Cost	15	\$ 8,000.00	\$ 120,000.00
(38)	Project Management	Program Cost	15	\$ 15,780.00	\$ -
(39)	Construction Contingency	Program Cost	15	\$ 26,300.00	\$ 394,500.00
(40)	Systems Interfaces and Updates	Program Cost			\$ 90,000.00
(41)	Customer Enrollment and Outreach	Program Cost			\$ 428,133.00
(42)	Other Overhead (G&A, E & S, etc)	Program Cost	15	\$ -	\$ -
(43)	Individual Offering Total				\$ 1,032,633.00

Offering 8: Public Level 2 Charging

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(44)	EVSE Warranty	Program Cost	200	\$ -	\$ -
(45)	All Other Development Costs (signage, lighting, bollards, landscaping, etc)	Program Cost	65	\$ 8,000.00	\$ 520,000.00
(46)	Project Management	Program Cost	65	\$ 6,180.00	\$ -
(47)	Construction Contingency	Program Cost	65	\$ 8,300.00	\$ 539,500.00
(48)	Systems Interfaces and Updates	Program Cost			\$ 300,000.00
(49)	Customer Enrollment and Outreach	Program Cost			\$ 428,133.00
(50)	Other Overhead (G&A, E & S, etc)	Program Cost	65	\$ -	\$ -
(51)	Individual Offering Total				\$ 1,787,633.00

Offering 9: DCFC - Non Utility Public DCFC Incentive

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(52)	Customer Enrollment and Outreach	Program Cost			\$ 428,134.00
(53)	Demand Charge Credit (via "set-point" design: 20 cents/kwhr)	Program Cost			\$ 2,420,779.00
(54)	Individual Offering Total				\$ 2,848,913.00

Offering 10 - Innovation Fund

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(55)	Innovation Fund	Program Cost			\$ 2,000,000.00

Offering 11 - Electric School Bus - Bus Incentive and Charging Infrastructure

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(56)	Electric School Bus - Bus Incentive and Charging Infrastructure	Program Cost			\$ 5,500,000.00

Offering 12 - NJ Transit - Charging Infrastructure

(A)		(B)	(C)	(D)	(E) = (D) x (C)
Program Components		Type	Units	Cost Per Unit	Estimated Cost*
(57)	NJ Transit - Charging Infrastructure	Program Cost			\$ 2,500,000.00
(58)	Total Reg Asset				\$ 27,082,510.09

Column (E): Sum of "Estimated Cost (\$)" for each individual offering by cost component. Please refer to the note associated with "\*\*\*".  
\* Represents the "Estimated Cost (\$)" for each cost component assuming only that individual offering is approved.

# ACE EV Filing -Capital Cost Breakdown Analysis

Schedule (MTN-R)-1

Page 3 of 17

**Offering 1 - Whole House TOU**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(1)	Replace Interval Meter	Capital Asset	300	\$ 100.00	\$ 30,000.00
(2)	Meter Upgrade (labor and other installation costs by utility)	Capital Asset	300	\$ 300.00	\$ 90,000.00
(3)	Individual Offering Total				\$ 120,000.00

**Offering 2 - Residential Off-Peak: Based On Vehicle Data**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(4)	Software	Capital Asset			\$ 24,000.00
(5)	Individual Offering Total				\$ 24,000.00

**Offering 3 - Residential Managed Charging: Based On EVSE Data**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(6)	Software	Capital Asset			\$ 1,875,000.00
(7)	Individual Offering Total				\$ 1,875,000.00

**Offering 4: Commercial - MDU (Multi-Dwelling Units - Condos, Apartments)**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(8)	Software	Capital Asset			\$ 167,500.00
(9)	Individual Offering Total				\$ 167,500.00

**Offering 5: Commercial - Workplace (Charging For Employees)**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(10)	Software	Capital Asset			\$ 118,750.00
(11)	Individual Offering Total				\$ 118,750.00

**Offering 6: Commercial - Fleet (Charging For Fleet Vehicles)**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(12)	Software	Capital Asset			\$ 118,750.00
(13)	Individual Offering Total				\$ 118,750.00

**Offering 7: Public DCFC's**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(14)	Site Engineering and Development (assessment, contracting, design, permits)	Capital Asset	15	\$ 15,000.00	\$ 225,000.00
(15)	New Service & Infrastructure -> EVSE (service drop, new meter, transformer, etc)	Capital Asset	15	\$ 40,000.00	\$ 600,000.00
(16)	DCFC EVSE (assumes at least 50KW units, CHaDEMO/CCS)	Capital Asset	45	\$ 50,000.00	\$ 2,250,000.00
(17)	Installation (EVSE installation, testing, commissioning, network activation)	Capital Asset	15	\$ 50,000.00	\$ 750,000.00
(18)	Project Management	Program Cost	15	\$ 15,780.00	\$ 236,700.00
(19)	Site Engineering and Development (assessment, contracting, design, permits)	Capital Asset	TBD	\$ 15,000.00	\$ 450,000.00
(20)	New Service & Make-Ready -> EVSE (service drop, new meter, transformer, etc)	Capital Asset	TBD	\$ 40,000.00	\$ 1,200,000.00
(21)	Software	Capital Asset			\$ 112,500.00
(22)	Individual Offering Total				\$ 5,824,200.00

**Offering 8: Public Level 2 Charging**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(23)	Site Engineering and Development (assessment, contracting, design, permits)	Capital Asset	65	\$ 15,000.00	\$ 975,000.00
(24)	New Service & Infrastructure -> EVSE (service drop, new meter, transformer, etc)	Capital Asset	65	\$ 40,000.00	\$ 2,600,000.00
(25)	L2 EVSE (assumes dual-plugs 7.2KW, J1772)	Capital Asset	200	\$ 5,000.00	\$ 1,000,000.00
(26)	Installation (EVSE installation, testing, commissioning, inspection, activation)	Capital Asset	65	\$ 20,000.00	\$ 1,300,000.00
(27)	Project Management	Capital Asset	65	\$ 6,180.00	\$ 401,700.00
(28)	Software	Capital Asset			\$ 500,000.00
(29)	Individual Offering Total				\$ 6,776,700.00

**Offering 9: DCFC - Non Utility Public DCFC Incentive**

	(A)	(B)	(C)	(D)	(E) = (D) x (C)
	Program Components	Type	Units	Cost Per Unit	Estimated Cost*
(30)	Individual Offering Total				

(31)	Total Capital				\$ 15,024,900.00
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Column (E): Sum of "Estimated Cost (\$)" for each individual offering by cost component. Please refer to the note associated with "\*".

\* Represents the "Estimated Cost (\$)" for each cost component assuming only that individual offering is approved.

# Class Weighting

Calculation of the Allocation of Capital Asset Costs

(A)		(B)	(C)	(D)	(E) = (B) x (C)		(F) = (B) x (D)	
Offering #		Total Capital Assets	Residential %	Other Customer %	Residential Contribution		Other Customer Contribution	
(1)	Whole House TOU (Offering 1)	\$ 120,000.00	100%	0%	\$ 120,000.00	\$ -		
(2)	Off Peak Charging Incentive (Offering 2)	\$ 24,000.00	100%	0%	\$ 24,000.00	\$ -		
(3)	Residential Rebate/ Manage Charging Program (Offering 3)	\$ 1,875,000.00	100%	0%	\$ 1,875,000.00	\$ -		
(4)	Multi-Dwelling Unit Charging (Offering 4)	\$ 167,500.00	0%	100%	\$ -	\$ 167,500.00		
(5)	Workplace Charging (Offering 5)	\$ 118,750.00	0%	100%	\$ -	\$ 118,750.00		
(6)	Fleet Charging (Offering 6)	\$ 118,750.00	0%	100%	\$ -	\$ 118,750.00		
(7)	Public DCFC's (Offering 7)	\$ 4,174,200.00	59%	41%	\$ 2,479,721.87	\$ 1,694,478.13		
(8)	Public DCFC's Make-ready work (Offering 7)	\$ 1,650,000.00	0%	100%	\$ -	\$ 1,650,000.00		
(9)	Public Level 2 Charging (Offering 8)	\$ 6,776,700.00	59%	41%	\$ 4,025,760.90	\$ 2,750,939.10		
(10)	Non-Utility-Owned Public Chargers (Offering 9)	\$ -	0%	100%	\$ -	\$ -		
(11)	Total	\$ 15,024,900.00			\$ 8,524,482.77	\$ 6,500,417.23		

Column (B): Refer to Column (E) of "Capital Cost Breakdown Analysis", Page 3 of 12, for each respective offering

Column (C) and (D): For Commercial Offerings, 100% of costs associated with capital assets are allocated to Commercial customers; for Residential Offerings, 100% are allocated to residential customers; for all other offerings, shared costs associated with capital assets are allocated based on the split of Total Delivery Revenues as shown on Lines (11) and (12) of "Total Delivery Revenues", Page 5 of 12.

Allocation of Regulatory Asset Costs

(A)		(B)	(C)	(D)	(E) = (B) x (C)		(F) = (B) x (D)	
Offering #		Total Regulatory Asset	Residential %	Other Customer %	Residential Contribution		Other Customer Contribution	
(14)	Whole House TOU (Offering 1)	\$ 428,133.00	100%	0%	\$ 428,133.00	\$ -		
(15)	Off Peak Charging Incentive (Offering 2)	\$ 1,037,156.00	100%	0%	\$ 1,037,156.00	\$ -		
(16)	Residential Rebate/ Manage Charging Program (Offering 3)	\$ 4,273,883.09	100%	0%	\$ 4,273,883.09	\$ -		
(17)	Multi-Dwelling Unit Charging (Offering 4)	\$ 2,635,102.00	0%	100%	\$ -	\$ 2,635,102.00		
(18)	Workplace Charging (Offering 5)	\$ 1,519,528.00	0%	100%	\$ -	\$ 1,519,528.00		
(19)	Fleet Charging (Offering 6)	\$ 1,519,529.00	0%	100%	\$ -	\$ 1,519,529.00		
(20)	Public DCFC's (Offering 7)	\$ 1,032,633.00	59%	41%	\$ 609,253.47	\$ 423,379.53		
(21)	Public Level 2 Charging (Offering 8)	\$ 1,787,633.00	59%	41%	\$ 1,054,703.47	\$ 732,929.53		
(22)	Non-Utility-Owned Public Chargers (Offering 9)	\$ 2,848,913.00	0%	100%	\$ -	\$ 2,848,913.00		
(23)	Innovation Fund (Offering 10)	\$ 2,000,000.00	59%	41%	\$ 1,188,118.38	\$ 811,881.62		
(24)	Electric School Bus Fund (Offering 11)	\$ 5,500,000.00	59%	41%	\$ 3,267,325.54	\$ 2,232,674.46		
(25)	NJ Transit Bus Electrification (Offering 12)	\$ 2,500,000.00	59%	41%	\$ 1,485,147.97	\$ 1,014,852.03		
(26)	Total	\$ 27,082,510.09			\$ 13,343,720.91	\$ 13,738,789.17		

Column (B): Refer to Column (E) of "Reg Asset Cost Breakdown Analysis", Page 2 of 12, for each respective offering

Column (C) and (D): For Commercial Offerings, 100% of costs associated with capital assets are allocated to Commercial customers; for Residential Offerings, 100% are allocated to residential customers; for all other offerings, shared costs associated with capital assets are allocated based on the split of Total Delivery Revenues as shown on Lines (11) and (12) of "Total Delivery Revenues", Page 5 of 12.

Program Cost Allocation Percentage

(A)		(B)
(12)	Residential	59%
(13)	Other Customer	41%

Source: Line (11) of "Total Delivery Revenues", page 5 of 12.

Source: Line (12) of "Total Delivery Revenues", page 5 of 12.

**Total Delivery Revenue (Proposed Revenue)**

	(A)	(B)	(C)	(D)
	Type	Rate Schedule	Amount	% Allocation
(1)	Residential	RS	\$ 252,856,698	59%
(2)	Other Customer	MGS-SECONDARY	\$ 76,125,408	18%
(3)	Other Customer	MGS-PRIMARY	\$ 1,439,528	0%
(4)	Other Customer	AGS-SECONDARY	\$ 59,322,342	14%
(5)	Other Customer	AGS-PRIMARY	\$ 11,486,945	3%
(6)	Other Customer	TGS-Sub Transmission	\$ 3,525,450	1%
(7)	Other Customer	TGS-Transmission	\$ 2,141,460	1%
(8)	Other Customer	Streetlighting Service	\$ 18,182,872	4%
(9)	Other Customer	Direct Dist. Connection	\$ 561,561	0%
(10)	<b>Total</b>		<b>\$ 425,642,264</b>	<b>100%</b>

Column (C): Source: "Exhibit A", Page 1 of 12, from the 3/13/2019 Decision and Order Adopting Initial Decision and Stipulation of Settlement. (BPU Docket No. ER18080925).

Column (D): Calculation: Column (C), Line (1) / Column (C), Line (10) for Column (D), Line 1; and so on.

**Total Delivery Revenue - Residential Vs. Other Customer**

(11)	Residential	59%	Source: Column (E), Line (1)
(12)	Other Customer	41%	Calculation: 1 - Line (11)

**As-Billed Billing Determinants (Exclude Lighting & Direct Distribution Connection)**

	(A)	(B)	(C)
	Type	Rate Schedule	kWh
(1)	Residential	RS	3,983,153,885
(2)	Other Customer	MGS-SECONDARY	1,262,257,212
(3)	Other Customer	MGS-PRIMARY	37,625,999
(4)	Other Customer	AGS-SECONDARY	-
(5)	Other Customer	AGS-PRIMARY	-
(6)	Other Customer	TGS-Sub Transmission	-
(7)	Other Customer	TGS-Transmission	-
(8)	<b>Total</b>		<b>5,283,037,096</b>

Column (C): Source: "Exhibit A", Pages 2 to 12 of 12, from the 3/13/2019 Decision and Order Adopting Initial Decision and Stipulation of Settlement (BPU Docket No. ER18080925).

**As-Billed Billing Determinants- Residential Vs. Other Customer**

(9)	Residential	3,983,153,885	Calculation: Line (1)
(10)	Other Customer	1,299,883,211	Calculation: Line (2) + Line (3) + ... + Line (6) + Line (7)



## Residential Revenue Requirement - Summary

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[illegible]

**ACE New Jersey**  
**Cap Asset Amortization - Capital - Residential**

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
(1) <b>Rate Base:</b>															
(2) Unamortized Balance	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900	\$ 15,024,900
(3) Amortized Balance	\$ 1,001,660	\$ 2,003,320	\$ 3,004,980	\$ 4,006,640	\$ 5,008,300	\$ 6,009,960	\$ 7,011,620	\$ 8,013,280	\$ 9,014,940	\$ 10,016,600	\$ 11,018,260	\$ 12,019,920	\$ 13,021,580	\$ 14,023,240	\$ 15,024,900
(4) Deferred Taxes	\$ (348,331)	\$ 592,162	\$ 393,614	\$ 215,965	\$ 55,036	\$ (91,263)	\$ (160,232)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)
(5) Net Rate Base	\$ 14,371,571	\$ 12,429,418	\$ 11,626,306	\$ 10,802,295	\$ 9,961,564	\$ 9,106,203	\$ 8,173,512	\$ 7,171,852	\$ 6,168,102	\$ 5,168,532	\$ 4,164,782	\$ 3,165,212	\$ 2,161,462	\$ 1,161,892	\$ 158,142
(6) <b>Operating Income:</b>															
(7) Depreciation	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660
(8) SIT-Current	\$ (97,232)	\$ (154,080)	\$ (139,578)	\$ (126,386)	\$ (114,241)	\$ (103,012)	\$ (96,628)	\$ (94,563)	\$ (92,630)	\$ (90,435)	\$ (88,501)	\$ (86,306)	\$ (84,372)	\$ (82,177)	\$ (80,243)
(9) FIT-Current	\$ (206,456)	\$ (327,163)	\$ (296,372)	\$ (268,360)	\$ (242,572)	\$ (218,730)	\$ (205,173)	\$ (200,790)	\$ (196,684)	\$ (192,023)	\$ (187,917)	\$ (183,256)	\$ (179,150)	\$ (174,489)	\$ (170,383)
(10) Deferred Taxes	\$ (348,331)	\$ 592,162	\$ 393,614	\$ 215,965	\$ 55,036	\$ (91,263)	\$ (160,232)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)
(11) Total Operating Expenses	\$ 349,642	\$ 1,112,579	\$ 959,324	\$ 822,879	\$ 699,883	\$ 588,655	\$ 539,627	\$ 546,075	\$ 554,204	\$ 558,971	\$ 567,100	\$ 571,866	\$ 579,995	\$ 584,762	\$ 592,891
(12) Return Required	\$ 1,017,507	\$ 880,003	\$ 823,142	\$ 764,802	\$ 705,279	\$ 644,719	\$ 578,685	\$ 507,767	\$ 436,702	\$ 365,932	\$ 294,867	\$ 224,097	\$ 153,032	\$ 82,262	\$ 11,196
(13) Required Oper. Income	\$ 1,367,149	\$ 1,992,582	\$ 1,782,466	\$ 1,587,682	\$ 1,405,162	\$ 1,233,374	\$ 1,118,312	\$ 1,053,842	\$ 990,905	\$ 924,903	\$ 861,966	\$ 795,963	\$ 733,027	\$ 667,024	\$ 604,087
(14) Revenue Conversion Factor	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101
(15) Revenue Requirement	\$ 1,901,723	\$ 2,771,710	\$ 2,479,436	\$ 2,208,488	\$ 1,954,600	\$ 1,715,641	\$ 1,555,587	\$ 1,465,909	\$ 1,378,363	\$ 1,286,553	\$ 1,199,007	\$ 1,107,196	\$ 1,019,651	\$ 927,840	\$ 840,294
(16) <b>Income Statement Check</b>															
(17) Revenue	\$ 1,901,723	\$ 2,771,710	\$ 2,479,436	\$ 2,208,488	\$ 1,954,600	\$ 1,715,641	\$ 1,555,587	\$ 1,465,909	\$ 1,378,363	\$ 1,286,553	\$ 1,199,007	\$ 1,107,196	\$ 1,019,651	\$ 927,840	\$ 840,294
(18) Depreciation & Amortization	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660	\$ 1,001,660
(19) Interest Expense	\$ 329,109	\$ 284,634	\$ 266,242	\$ 247,373	\$ 228,120	\$ 208,532	\$ 187,173	\$ 164,235	\$ 141,250	\$ 118,359	\$ 95,374	\$ 72,483	\$ 49,497	\$ 26,607	\$ 3,621
(20) Net income before Taxes	\$ 570,954	\$ 1,485,416	\$ 1,211,533	\$ 959,455	\$ 724,820	\$ 505,449	\$ 366,754	\$ 300,014	\$ 235,454	\$ 166,533	\$ 101,973	\$ 33,053	\$ (31,507)	\$ (100,428)	\$ (164,987)
(21) Income Tax - Current	\$ 230,887	\$ 297,885	\$ 261,019	\$ 226,060	\$ 192,625	\$ 160,524	\$ 135,475	\$ 116,714	\$ 98,144	\$ 79,193	\$ 60,623	\$ 41,671	\$ 23,101	\$ 4,150	\$ (14,420)
(22) Income Tax - Deferred	\$ (348,331)	\$ 592,162	\$ 393,614	\$ 215,965	\$ 55,036	\$ (91,263)	\$ (160,232)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)	\$ (160,232)	\$ (158,142)
(23) Earnings	\$ 688,398	\$ 595,369	\$ 556,900	\$ 517,430	\$ 477,159	\$ 436,187	\$ 391,511	\$ 343,532	\$ 295,452	\$ 247,573	\$ 199,493	\$ 151,614	\$ 103,534	\$ 55,655	\$ 7,575
(24) Return on Equity per WACC	\$ 688,398	\$ 595,369	\$ 556,900	\$ 517,430	\$ 477,159	\$ 436,187	\$ 391,511	\$ 343,532	\$ 295,452	\$ 247,573	\$ 199,493	\$ 151,614	\$ 103,534	\$ 55,655	\$ 7,575
(25) MACRS	\$ 751,245	\$ 1,427,366	\$ 1,284,629	\$ 1,156,917	\$ 1,041,226	\$ 936,051	\$ 886,469	\$ 886,469	\$ 887,972	\$ 886,469	\$ 887,972	\$ 886,469	\$ 887,972	\$ 886,469	\$ 887,972
(26) <b>Revenue Requirement Summary</b>															
(27) Period (years)	15.00														
(28) NPV of Cost Rev Req.	\$15,753,129														
(29) Levelized Annual Revenue Requirement	\$1,738,359														
(30) % Assigned to Residential Class	57%														
(31) Levelized Annual Revenue Requirement - Residential	\$986,270.03														
(32) Annual Residential kWh	3,983,153.885														
(33) \$/kWh Residential Charge	\$ 0.0002														
(34) ACE NJ - Typical Monthly Residential Usage	679.00														
(35) ACE NJ - Typical Monthly Residential Cost	\$ 0.168														

ACE New Jersey  
Program Regulatory Asset Amortization - Residential

Schedule (MTN-R)-1  
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	Year 1	Year 2	Year 3	Year 4	Year 5
(1) Rate Base:					
(2) Unamortized Balance	\$ 27,082,510	\$ 27,082,510	\$ 27,082,510	\$ 27,082,510	\$ 27,082,510
(3) Amortized Balance	\$ 5,416,502	\$ 10,833,004	\$ 16,249,506	\$ 21,666,008	\$ 27,082,510
(4) Deferred Taxes	\$ -	\$ 4,520,658	\$ (301,377)	\$ (3,194,598)	\$ (3,194,598)
(5) Net Rate Base	\$ 21,666,008	\$ 11,728,848	\$ 11,134,381	\$ 8,611,101	\$ 3,194,598
(6) Operating Income:					
(7) Amortization	\$ 5,416,502	\$ 5,416,502	\$ 5,416,502	\$ 5,416,502	\$ 5,416,502
(8) SIT-Current	\$ (532,139)	\$ (804,149)	\$ (490,934)	\$ (298,539)	\$ (287,376)
(9) FIT-Current	\$ (1,129,908)	\$ (1,707,477)	\$ (1,042,416)	\$ (633,898)	\$ (610,194)
(10) Deferred Taxes	\$ -	\$ 4,520,658	\$ (301,377)	\$ (3,194,598)	\$ (3,194,598)
(11) Total Operating Expenses	\$ 3,754,455	\$ 7,425,533	\$ 3,581,775	\$ 1,289,467	\$ 1,324,334
(12) Return Required	\$ 1,533,953	\$ 830,402	\$ 788,314	\$ 609,666	\$ 226,178
(13) Required Oper. Income	\$ 5,288,408	\$ 8,255,936	\$ 4,370,089	\$ 1,899,133	\$ 1,550,512
(14) Revenue Conversion Factor	1.39101	1.39101	1.39101	1.39101	1.39101
(15) Revenue Requirement	\$ 7,356,250	\$ 11,484,123	\$ 6,078,856	\$ 2,641,720	\$ 2,156,783
(16) <b>Income Statement Check</b>					
(17) Revenue	\$ 7,356,250	\$ 11,484,123	\$ 6,078,856	\$ 2,641,720	\$ 2,156,783
(18) Depreciation & Amortization	\$ 5,416,502	\$ 5,416,502	\$ 5,416,502	\$ 5,416,502	\$ 5,416,502
(19) Interest Expense	\$ 496,152	\$ 268,591	\$ 254,977	\$ 197,194	\$ 73,156
(20) Net income before Taxes	\$ 1,443,597	\$ 5,799,030	\$ 407,376	\$ (2,971,976)	\$ (3,332,875)
(21) Income Tax - Current	\$ 405,795	\$ 716,560	\$ 175,417	\$ (189,849)	\$ (291,298)
(22) Income Tax - Deferred	\$ -	\$ 4,520,658	\$ (301,377)	\$ (3,194,598)	\$ (3,194,598)
(23) Earnings	\$ 1,037,802	\$ 561,812	\$ 533,337	\$ 412,472	\$ 153,021
(24) Return on Equity per WACC	\$ 1,037,802	\$ 561,812	\$ 533,337	\$ 412,472	\$ 153,021
(25) MACRS	\$ 5,416,502	\$ 8,666,403	\$ 5,199,842	\$ 3,119,905	\$ 3,119,905

(26) <b>Revenue Requirement Summary</b>	
(27) Period (years)	5.00
(28) NPV of Cost Rev Req.	\$25,377,964
(29) Levelized Annual Revenue Requirement	\$6,202,713
(30) Less: Public Charging Revenues	TBD
(31) % Assigned to Residential Class	49%
(32) Levelized Annual Revenue Requirement - Residential	\$3,056,115
(33) Annual Residential kWh	3,983,153,885
(34) \$/kWh Residential Charge	\$ 0.0008
(35) ACE NJ - Typical Monthly Residential Usage	679.00
(36) ACE NJ - Typical Monthly Residential Cost	\$ 0.521

Regulatory Asset - Capital - Amortization

(1)	Total Capital	\$ 15,024,900.00															
(2)	ACE NJ - Residential	Year 1	Year 2	Year 3	Year 4	Year 5											
(3)	Deployment Schedule (5-Year)	100%	0%	0%	0%	0%											
(4)	ACE NJ - Residential	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	
(5)	Incremental Gross Plant	\$ 15,024,900.00	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	
(6)	Accumulated Gross Plant	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	\$ 15,024,900.00	
\$ 1,638,279.00																	
(7)	ACE NJ - Residential	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	Total
(8)	Amortization Expense - Year 1	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 15,024,900.00
(9)	Amortization Expense - Year 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(10)	Amortization Expense - Year 3	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(11)	Amortization Expense - Year 4	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(12)	Amortization Expense - Year 5	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
(13)	Total Amortization Expense	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 1,001,660.00	\$ 15,024,900.00
(14)	ACE NJ - Residential	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15	
(15)	Cumulative Amortization	\$ 1,001,660.00	\$ 2,003,320.00	\$ 3,004,980.00	\$ 4,006,640.00	\$ 5,008,300.00	\$ 6,009,960.00	\$ 7,011,620.00	\$ 8,013,280.00	\$ 9,014,940.00	\$ 10,016,600.00	\$ 11,018,260.00	\$ 12,019,920.00	\$ 13,021,580.00	\$ 14,023,240.00	\$ 15,024,900.00	

<b>WACC</b>			
Capital Structure	Weight	Rate	Weighted Rate
Long Term Debt	50.06%	4.58%	2.29%
Common Stock	49.94%	9.60%	4.79%
Total	100.00%		7.08%
Source: BPU Docket No. ER18080925			

Revenue Conversion Factor		
<b>Tax Rates</b>		
(1)	Federal Income Tax Rate	0.210000
(2)	New Jersey State Income Tax Rate	0.090000
(3)	New Jersey - BPU Assessment and Ratepayer Advocate	0.00245
<b>Source / Notes:</b>		
		<b>Current Federal Corporate Income Tax Rate</b>
		<b>Current NJ Corporate Income Tax Rate</b>
		<b>Current NJ BPU Assessment and Ratepayer Advocate</b>
<b>Conversion Factor (Income Tax Only)</b>		
(4)	NJ Taxable Income	1.000000
(5)	NJ Income Tax	0.090000
(6)	Federal Taxable Income	0.910000
(7)	Federal Income Tax	0.191100
(8)	Total Additional Taxes	0.281100
(9)	Increase in Earnings (1 - Additional Taxes)	0.718900
(10)	Revenue Conversion Factor (1 / Increase in Earnings)	1.391014
<b>Conversion Factor (Including BPU Assessment / Ratepayer Advocate)</b>		
(11)	NJ Assessment	1.000000
(12)	NJ Assessment Tax Rate	0.002452
(13)	NJ Taxable Income	0.997548
(14)	NJ Income Tax	0.089779
(15)	Federal Taxable Income	0.907769
(16)	Federal Income Tax	0.190631
(17)	Total Additional Taxes	0.282863
(18)	Increase in Earnings (1 - Additional Taxes)	0.717137
(19)	Revenue Conversion Factor (1 / Increase in Earnings)	1.394433

**Atlantic City Electric Company**

## MACRS Tax Depreciation Rates

(1) Recovery Year	(2) 3-Year	(3) 5-Year	(4) 7-Year	(5) 10-Year	(6) 15-Year	(7) 20-Year
1	33.33	20	14.29	10	5	3.75
2	44.45	32	24.49	18	9.5	7.219
3	14.81	19.2	17.49	14.4	8.55	6.677
4	7.41	11.52	12.49	11.52	7.7	6.177
5		11.52	8.93	9.22	6.93	5.713
6		5.76	8.92	7.37	6.23	5.285
7			8.93	6.55	5.9	4.888
8			4.46	6.55	5.9	4.522
9				6.56	5.91	4.462
10				6.55	5.9	4.461
11				3.28	5.91	4.462
12					5.9	4.461
13					5.91	4.462
14					5.9	4.461
15					5.91	4.462
16					2.95	4.461
17						4.462
18						4.461
19						4.462
20						4.461
21						2.231

## ACE NJ

### Development of Public Level II EVSE Charger Revenue Requirements

**Schedule (MTN-R)-1**

Page 14 of 17

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Rate Base:															
Gross Plant	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700	\$ 6,776,700
Accumulated Depreciation	\$ 451,780	\$ 903,560	\$ 1,355,340	\$ 1,807,120	\$ 2,258,900	\$ 2,710,680	\$ 3,162,460	\$ 3,614,240	\$ 4,066,020	\$ 4,517,800	\$ 4,969,580	\$ 5,421,360	\$ 5,873,140	\$ 6,324,920	\$ 6,776,700
Deferred Taxes	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Net Rate Base	\$ 6,324,920	\$ 5,873,140	\$ 5,421,360	\$ 4,969,580	\$ 4,517,800	\$ 4,066,020	\$ 3,614,240	\$ 1,638,279	\$ 2,710,680	\$ 2,258,900	\$ 1,807,120	\$ 1,355,340	\$ 903,560	\$ 451,780	\$ -
Operating Income:															
Depreciation	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780
SIT-Current	\$ (53,696)	\$ (52,765)	\$ (51,834)	\$ (50,903)	\$ (49,971)	\$ (49,040)	\$ (48,109)	\$ (44,037)	\$ (46,247)	\$ (45,316)	\$ (44,385)	\$ (43,454)	\$ (42,522)	\$ (41,591)	\$ (40,660)
FIT-Current	\$ (114,014)	\$ (112,037)	\$ (110,060)	\$ (108,083)	\$ (106,106)	\$ (104,129)	\$ (102,152)	\$ (93,505)	\$ (98,198)	\$ (96,221)	\$ (94,243)	\$ (92,266)	\$ (90,289)	\$ (88,312)	\$ (86,335)
Deferred Taxes	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Operating Expenses	\$ 284,070	\$ 286,978	\$ 289,886	\$ 292,795	\$ 295,703	\$ 298,611	\$ 301,519	\$ 314,239	\$ 307,335	\$ 310,244	\$ 313,152	\$ 316,060	\$ 318,968	\$ 321,876	\$ 324,785
Return Required	\$ 447,804	\$ 415,818	\$ 383,832	\$ 351,846	\$ 319,860	\$ 287,874	\$ 255,888	\$ 115,990	\$ 191,916	\$ 159,930	\$ 127,944	\$ 95,958	\$ 63,972	\$ 31,986	\$ -
Required Oper. Income	\$ 731,874	\$ 702,796	\$ 673,719	\$ 644,641	\$ 615,563	\$ 586,485	\$ 557,407	\$ 430,229	\$ 499,252	\$ 470,174	\$ 441,096	\$ 412,018	\$ 382,940	\$ 353,862	\$ 324,785
Revenue Conversion Factor	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101
Revenue Requirement	\$ 1,018,047	\$ 977,600	\$ 937,152	\$ 896,704	\$ 856,257	\$ 815,809	\$ 775,361	\$ 598,454	\$ 694,466	\$ 654,018	\$ 613,571	\$ 573,123	\$ 532,675	\$ 492,228	\$ 451,780
<b>Income Statement Check</b>															
Revenue	\$ 1,018,047	\$ 977,600	\$ 937,152	\$ 896,704	\$ 856,257	\$ 815,809	\$ 775,361	\$ 598,454	\$ 694,466	\$ 654,018	\$ 613,571	\$ 573,123	\$ 532,675	\$ 492,228	\$ 451,780
Depreciation & Amortization	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780	\$ 451,780
Interest Expense	\$ 144,841	\$ 134,495	\$ 124,149	\$ 113,803	\$ 103,458	\$ 93,112	\$ 82,766	\$ 37,517	\$ 62,075	\$ 51,729	\$ 41,383	\$ 31,037	\$ 20,692	\$ 10,346	\$ -
Net income before Taxes	\$ 421,427	\$ 391,325	\$ 361,223	\$ 331,121	\$ 301,019	\$ 270,917	\$ 240,815	\$ 109,158	\$ 180,611	\$ 150,510	\$ 120,408	\$ 90,306	\$ 60,204	\$ 30,102	\$ -
Income Tax - Current	\$ 118,463	\$ 110,001	\$ 101,540	\$ 93,078	\$ 84,616	\$ 76,155	\$ 67,693	\$ 30,684	\$ 50,770	\$ 42,308	\$ 33,847	\$ 25,385	\$ 16,923	\$ 8,462	\$ -
Income Tax - Deferred	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Earnings	\$ 302,964	\$ 281,323	\$ 259,683	\$ 238,043	\$ 216,403	\$ 194,762	\$ 173,122	\$ 78,474	\$ 129,842	\$ 108,201	\$ 86,561	\$ 64,921	\$ 43,281	\$ 21,640	\$ -



## ACE NJ Development of Public DCFC Revenue Requirements

**Schedule (MTN-R)-1**

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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11	Year 12	Year 13	Year 14	Year 15
Rate Base:															
Gross Plant	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200	\$ 4,174,200
Accumulated Depreciation	\$ 278,280	\$ 556,560	\$ 834,840	\$ 1,113,120	\$ 1,391,400	\$ 1,669,680	\$ 1,947,960	\$ 2,226,240	\$ 2,504,520	\$ 2,782,800	\$ 3,061,080	\$ 3,339,360	\$ 3,617,640	\$ 3,895,920	\$ 4,174,200
Deferred Taxes	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Net Rate Base	\$ 3,895,920	\$ 3,617,640	\$ 3,339,360	\$ 3,061,080	\$ 2,782,800	\$ 2,504,520	\$ 2,226,240	\$ 1,638,279	\$ 1,669,680	\$ 1,391,400	\$ 1,113,120	\$ 834,840	\$ 556,560	\$ 278,280	\$ -
Operating Income:															
Depreciation	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280
SIT-Current	\$ (33,075)	\$ (32,501)	\$ (31,928)	\$ (31,354)	\$ (30,781)	\$ (30,207)	\$ (29,633)	\$ (28,422)	\$ (28,486)	\$ (27,913)	\$ (27,339)	\$ (26,766)	\$ (26,192)	\$ (25,619)	\$ (25,045)
FIT-Current	\$ (70,229)	\$ (69,011)	\$ (67,793)	\$ (66,575)	\$ (65,357)	\$ (64,140)	\$ (62,922)	\$ (60,349)	\$ (60,486)	\$ (59,268)	\$ (58,051)	\$ (56,833)	\$ (55,615)	\$ (54,397)	\$ (53,179)
Deferred Taxes	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total Operating Expenses	\$ 174,977	\$ 176,768	\$ 178,559	\$ 180,351	\$ 182,142	\$ 183,933	\$ 185,725	\$ 189,510	\$ 189,307	\$ 191,099	\$ 192,890	\$ 194,681	\$ 196,473	\$ 198,264	\$ 200,055
Return Required	\$ 275,831	\$ 256,129	\$ 236,427	\$ 216,724	\$ 197,022	\$ 177,320	\$ 157,618	\$ 115,990	\$ 118,213	\$ 98,511	\$ 78,809	\$ 59,107	\$ 39,404	\$ 19,702	\$ -
Required Oper. Income	\$ 450,808	\$ 432,897	\$ 414,986	\$ 397,075	\$ 379,164	\$ 361,253	\$ 343,343	\$ 305,500	\$ 307,521	\$ 289,610	\$ 271,699	\$ 253,788	\$ 235,877	\$ 217,966	\$ 200,055
Revenue Conversion Factor	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101	1.39101
Revenue Requirement	\$ 627,080	\$ 602,166	\$ 577,251	\$ 552,337	\$ 527,423	\$ 502,509	\$ 477,594	\$ 424,954	\$ 427,766	\$ 402,851	\$ 377,937	\$ 353,023	\$ 328,109	\$ 303,194	\$ 278,280
<b>Income Statement Check</b>															
Revenue	\$ 627,080	\$ 602,166	\$ 577,251	\$ 552,337	\$ 527,423	\$ 502,509	\$ 477,594	\$ 424,954	\$ 427,766	\$ 402,851	\$ 377,937	\$ 353,023	\$ 328,109	\$ 303,194	\$ 278,280
Depreciation & Amortization	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280
Interest Expense	\$ 89,217	\$ 82,844	\$ 76,471	\$ 70,099	\$ 63,726	\$ 57,354	\$ 50,981	\$ 37,517	\$ 38,236	\$ 31,863	\$ 25,490	\$ 19,118	\$ 12,745	\$ 6,373	\$ -
Net income before Taxes	\$ 259,583	\$ 241,042	\$ 222,500	\$ 203,958	\$ 185,417	\$ 166,875	\$ 148,333	\$ 109,158	\$ 111,250	\$ 92,708	\$ 74,167	\$ 55,625	\$ 37,083	\$ 18,542	\$ -
Income Tax - Current	\$ 72,969	\$ 67,757	\$ 62,545	\$ 57,333	\$ 52,121	\$ 46,909	\$ 41,697	\$ 30,684	\$ 31,272	\$ 26,060	\$ 20,848	\$ 15,636	\$ 10,424	\$ 5,212	\$ -
Income Tax - Deferred	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Earnings	\$ 186,615	\$ 173,285	\$ 159,955	\$ 146,626	\$ 133,296	\$ 119,967	\$ 106,637	\$ 78,474	\$ 79,978	\$ 66,648	\$ 53,318	\$ 39,989	\$ 26,659	\$ 13,330	\$ -
Return on Equity per WACC	\$ 186,615	\$ 173,285	\$ 159,955	\$ 146,626	\$ 133,296	\$ 119,967	\$ 106,637	\$ 78,474	\$ 79,978	\$ 66,648	\$ 53,318	\$ 39,989	\$ 26,659	\$ 13,330	\$ -
MACRS	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280	\$ 278,280
<b>Revenue Requirement Summary</b>															
Period (years)	15.00														
NPV of Cost Rev Req.	\$4,369,516														
Levelized Annual Revenue Requirement	\$482,176														

<b>WACC</b>			
Capital Structure	Weight	Rate	Weighted Rate
Long Term Debt	50.06%	4.58%	2.29%
Common Stock	49.94%	9.60%	4.79%
Total	100.00%		7.08%
Source: BPU Docket No. ER18080925			

Revenue Conversion Factor		
<b>Tax Rates</b>		
(1)	Federal Income Tax Rate	0.210000
(2)	New Jersey State Income Tax Rate	0.090000
(3)	New Jersey - BPU Assessment and Ratepayer Advocate	0.00245
<b>Source / Notes:</b>		
		<b>Current Federal Corporate Income Tax Rate</b>
		<b>Current NJ Corporate Income Tax Rate</b>
		<b>Current NJ BPU Assessment and Ratepayer Advocate</b>
<b>Conversion Factor (Income Tax Only)</b>		
(4)	NJ Taxable Income	1.000000
(5)	NJ Income Tax	0.090000
(6)	Federal Taxable Income	0.910000
(7)	Federal Income Tax	0.191100
(8)	Total Additional Taxes	0.281100
(9)	Increase in Earnings (1 - Additional Taxes)	0.718900
(10)	Revenue Conversion Factor (1 / Increase in Earnings)	1.391014
<b>Conversion Factor (Including BPU Assessment / Ratepayer Advocate)</b>		
(11)	NJ Assessment	1.000000
(12)	NJ Assessment Tax Rate	0.002452
(13)	NJ Taxable Income	0.997548
(14)	NJ Income Tax	0.089779
(15)	Federal Taxable Income	0.907769
(16)	Federal Income Tax	0.190631
(17)	Total Additional Taxes	0.282863
(18)	Increase in Earnings (1 - Additional Taxes)	0.717137
(19)	Revenue Conversion Factor (1 / Increase in Earnings)	1.394433

## Schedule (MTN-R)-2

## ACE - New Jersey: Rate Schedule "R-PIV"

**Proposed**

	<b>Summer</b>	<b>(06/01/2020 - 09/30/2020)</b>
(1)	Residential SOS Rate	\$0.073153

(2)	On-Peak Multiplier	1.8959
(3)	Off-Peak Multiplier	0.6640

(4)	On-Peak Residential SOS Rate	\$ <b>0.138690</b>
(5)	Off-Peak Residential SOS Rate	\$ <b>0.048570</b>

(6)	Ratio of On-to-Off-Peak	2.86
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	<b>Winter</b>	<b>(10/01/2020 - 05/31/2021)</b>
(1)	Residential SOS Rate	\$0.080144

(2)	On-Peak Multiplier	2.3568
(3)	Off-Peak Multiplier	0.6482

(4)	On-Peak Residential SOS Rate	\$ <b>0.188880</b>
(5)	Off-Peak Residential SOS Rate	\$ <b>0.051950</b>

(6)	Ratio of On-to-Off-Peak	3.64
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Notes: Based on Actual Charging Data from Pepco Maryland. R-PIV is Pepco's wholehouse TOU Rate. PIV is separately metered EV Charging.

## Schedule (MTN-R)-3

**ATLANTIC CITY ELECTRIC COMPANY**

**BPU NJ No. XX Electric Service - Section IV Fortieth Revised Sheet Replaces Thirty-Ninth Revised Sheet No. X**

**RATE SCHEDULE RS-PIV  
(Residential Service – Plug-In Vehicle Charging)**

**AVAILABILITY**

Available for full domestic service to individually metered residential customers, including rural domestic customers, engaged principally in agricultural pursuits, who own or lease a plug-in vehicle which requires electric service to provide periodic battery charging and who are not participants of Rider "REVCP" and who would otherwise be eligible to take electric service under Rate Schedule "RS".

The customer agrees to allow the Company to maintain necessary equipment (if applicable) to monitor or manage the PIV load.

	<b>SUMMER</b> June Through September	<b>WINTER</b> October Through May
<b>Delivery Service Charges:</b>		
Customer Charge (\$/Month)	\$5.77	\$5.77
<b>Distribution Rates (\$/kWh)</b>		
First Block	\$0.065547	\$0.059995
(Summer <= 750 kWh; Winter <= 500kWh)		
Excess kWh	\$0.076291	\$0.059995
<b>Non-Utility Generation Charge (NGC) (\$/kWh)</b>	See Rider NGC	
<b>Green-PIV (Optional) (\$/kWh)</b>	\$0.054300	\$0.0543000
<b>Societal Benefits Charge (\$/kWh)</b>		
Clean Energy Program	See Rider SBC	
Universal Service Fund	See Rider SBC	
Lifeline	See Rider SBC	
Uncollectible Accounts	See Rider SBC	
<b>Transition Bond Charge (TBC) (\$/kWh)</b>	See Rider SEC	
<b>Market Transition Charge Tax (MTC-Tax) (\$/kWh)</b>	See Rider SEC	
<b>Transmission Service Charges (\$/kWh):</b>		
Transmission Rate	\$0.020425	\$0.020425
Reliability Must Run Transmission Surcharge	\$0.000000	\$0.000000
Transmission Enhancement Charge (\$/kWh)	See Rider BGS	
<b>Basic Generation Service Charge (\$/kWh)</b>		
On-Peak	\$0.138690	\$0.188880
Off-Peak	\$0.048570	\$0.051950
<b>Regional Greenhouse Gas Initiative Recovery Charge (\$/kWh)</b>	See Rider RGGI	

Date of Issue: X

Effective Date: X

Issued by: David M. Velazquez, President and Chief Executive Officer – Atlantic City Electric Company Filed pursuant to Board of Public Utilities of the State of New Jersey directives associated with the BPU Docket Nos. XXXXXXXXXXXX and XXXXXXXXXXXX

**ATLANTIC CITY ELECTRIC COMPANY****BPU NJ No. XX Electric Service - Section IV      Fifth Revised Sheet Replaces Fourth Revised Sheet  
No. X**

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**RATE SCHEDULE RS-PIV (Continued)  
(Residential Service – Plug-In Vehicle Charging)****CORPORATE BUSINESS TAX (CBT)**

Charges under this rate schedule include a component for Corporate Business Taxes as set forth in Rider CBT.

**NEW JERSEY SALES AND USE TAX (SUT)**

Charges under this rate schedule include a component for New Jersey Sales and Use Tax as set forth in Rider SUT.

**TERM OF CONTRACT**

None, except that reasonable notice of service discontinuance will be required.

**TERMS AND CONDITIONS**

See Section II inclusive for Terms and Conditions of Service.

"In accordance with P.L. 1997, c. 162, the charges in this Rate Schedule includes provision for the New Jersey Corporation Business Tax and the New Jersey Sales and Use Tax. When billed to customers exempt from one or more of these taxes, as set forth in Riders CBT and SUT, such charges will be reduced by the relevant amount of such taxes included therein."

**PRICE TO COMPARE**

A customer on this Rate Schedule "RS-PIV" may not choose to receive electric supply from a third party supplier as defined in Section 11 of the Standard Terms and Conditions of this Tariff.

**PEAK HOURS**

For Rate Schedule "RS-PIV", On-Peak hours are considered to be 12:00 PM to 8:00 PM, Monday through Friday, excluding holidays falling on weekdays. All other hours are Off-Peak.

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**Date of Issue: X****Effective Date: X**

**Issued by: David M. Velazquez, President and Chief Executive Officer – Atlantic City Electric  
Company Filed pursuant to Board of Public Utilities of the State of New Jersey directives  
associated with the BPU Docket No. XXXXXXXXXX**



**ATLANTIC CITY ELECTRIC COMPANY****BPU NJ No. XX Electric Service - Section IV Fortieth Revised Sheet Replaces Thirty-Ninth Revised Sheet No. X****RESIDENTIAL ELECTRIC VEHICLE CHARGING PROGRAM  
RIDER "REVCP"****AVAILABILITY**

The Company's Residential Electric Vehicle (EV) Charging Program Rider (Rider "REVCP") includes three offerings: (1) rebate program for up to (300) eligible residential customers with existing Plug-in-Vehicles (PIV) and charging equipment for a Company approved connected car telematics device ("C2"); (2) a rebate program for (1500) eligible customers on a first-come-first-served basis to install Smart EV Level 2 (L2) Electric Vehicle Supply Equipment (EVSE). This rebate is for Company approved devices and will cover 50% of EVSE cost as well as 50% of the associated installation costs. The 50% EVSE and 50% installation rebate is not available to Customer's with existing EVSE equipment; and (3) a 5 cent per kilowatt hour incentive for off-peak charging net of any on-peak charging as defined in Rider "REVCP" in the form of an off-bill rebate. Customer's receiving either rebate (1) or (2) will be automatically enrolled in the off-peak off-bill rebate (3). Rebates (1) and (2) are mutually exclusive. These offers are only available to Rate Schedule "RS".

**RESIDENTIAL CONNECTED CAR TELEMATICS DEVIC, MANAGED CHARGING PROGRAMS, AND OFF-PEAK CHARGING INCENVTIVE PROGRAMS - OPERATION**

The Company has three residential program offerings under Rider "REVCP" to eligible customers who install a qualifying a Connected Car Telematics Device or an EV L2 Smart Charger and have at least one plug-in vehicle ("PIV"):

1. **Residential Connected Car Telematics Device:** The Company will offer 300 C2 devices valued at \$99 each to eligible residential customers for the purchase and installation of a qualifying connected car telematics device including telecommunications cost. The C2 device would be located behind-the-meter and would be owned and operated by the customer receiving the rebate. The C2 device must be located on customer-owned property, or in the case of rental property, with approval from the owner of record. This program offers customers a maximum of one \$99 C2 device per premise covering the purchase. Applications can be made beginning xxxx and C2 devices will be awarded on a first-come basis based on the completed application date and the application meeting all of the program requirements. Customers will be notified by mail when an application is complete.

Customers are required to take electric service under Schedule "R" in order to be eligible for this program. Customers taking service under Schedule "R" and also Rider "NEM" (Net Energy Metering) are eligible for this program under Rider "REVCP". Applicants taking service under Schedule "R" are not required to receive their energy supply through the Company's Standard Offer Service.

The Customer is required to submit an application with all of the necessary documentation within 30 days. Applicants agree to share the charging data from the C2 device with the Company. A list of qualified C2 device manufacturers and models is available on the Company's website as of xxxx for use by customers in making decisions about qualifying C2 device purchases. Customers must also sign a customer participation agreement with the Company regarding program terms, conditions, and duration.

Customers may refer to the Company's website to find information about applying for a C2 device under this program, the complete list of eligibility and documentation requirements, and the online form for submitting applications. The program has a 3-year enrollment window and only applies to applications received on or after xxxx and the program will end on xxxx.

2. **Discounted Level 2 Smart Charger Program (Managed Charging):** The Company will offer a 50% discounted L2 Smart Charger, 50% discounted installation of the Smart Charger for customers who do not already own EVSE equipment. This Program is limited up to 1500 participating customers on a first-come-first-served basis.

The Smart Charger would be located behind-the-meter and would be owned and operated by the customer receiving the program incentives under this offering. The Smart Charger must be located on

customer-owned property, or in the case of rental property, with approval from the owner of record. Applications will be awarded on a first-come basis based on the completed application date and the application meeting all the program requirements. Customers will be notified by mail when an application is complete.

Customers are required to take electric service under Rate Schedule "RS". Customers taking service under Rider "NEM" (Net Energy Metering) are eligible for this Program under Rider "REVCP". Program applicants under Schedule "RS" are not required to receive their energy supply through the Company's Standard Offer Service.

The Customer is required to submit an application with all of the necessary documentation within 30 days. Applicants will be required to provide proof of purchase of an eligible EV charger and agree to share the charging data from the Smart Charger with the Company. A list of qualified Smart Charger manufacturers and models is available on the Company's website as of xxxx for use by customers in making decisions about qualifying EV charger purchases. Customers must also sign a customer participation agreement with the Company regarding program terms, conditions, and duration.

Customers may refer to the Company's website to find information about applying for this program, the incentives offered, the complete list of eligibility and documentation requirements, and the online form for submitting applications. The program has a 3-year enrollment window and only applies to Smart Chargers purchased and installed on or after xxxx and the program will end on xxxx.

3. **Off-Peak Off-Bill Rebate:** Customer's receiving either equipment and/or rebates under offerings (1) and (2) within Rider "REVCP" will be automatically enrolled in the off-peak charging incentive. This incentive will utilize the data from (1) the C2 device and (2) the Smart Charger to determine on and off-peak usage. For purposes of the off-bill rebate, the total monthly measured off-peak PIV charging net of any on-peak charging will receive a \$0.05 per kilowatt hour rebate. Where the on and off-peak periods are:

**On-Peak:** 12:00 PM (noon) to 8:00 PM., Monday through Friday excluding holidays falling on Weekdays;

**Off-Peak:** 8:01 PM to 11:59 AM, and all Weekends.

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Date of Issue: X

Effective Date: X

Issued by: David M. Velazquez, President and Chief Executive Officer – Atlantic City Electric Company Filed pursuant to Board of Public Utilities of the State of New Jersey directives associated with the BPU Docket Nos. XXXXXXXXXXXX and XXXXXXXXXXXX

**ATLANTIC CITY ELECTRIC COMPANY****BPU NJ No. XX Electric Service - Section IV Fifth Revised Sheet Replaces Fourth Revised Sheet No. X**

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**RESIDENTIAL ELECTRIC VEHICLE CHARGING PROGRAM  
RIDER "REVCP"****CORPORATE BUSINESS TAX (CBT)**

Charges under this rider include a component for Corporate Business Taxes as set forth in Rider CBT.

**NEW JERSEY SALES AND USE TAX (SUT)**

Charges under this rate schedule include a component for New Jersey Sales and Use Tax as set forth in Rider SUT.

**TERM OF CONTRACT**

The customer agrees to pay for plug-in vehicle charging at the point of sale.

**TERMS AND CONDITIONS**

See Section II inclusive for Terms and Conditions of Service.

"In accordance with P.L. 1997, c. 162, the charges in this Rate Schedule includes provision for the New Jersey Corporation Business Tax and the New Jersey Sales and Use Tax. When billed to customers exempt from one or more of these taxes, as set forth in Riders CBT and SUT, such charges will be reduced by the relevant amount of such taxes included therein."

**PRICE TO COMPARE**

A customer may not choose to receive electric supply from a third party supplier as defined in Section 11 of the Standard Terms and Conditions of this Tariff.

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**Date of Issue: X****Effective Date: X**

**Issued by: David M. Velazquez, President and Chief Executive Officer – Atlantic City Electric Company  
Filed pursuant to Board of Public Utilities of the State of New Jersey directives associated with the  
BPU Docket No. XXXXXXXXXX  
ATLANTIC CITY ELECTRIC COMPANY**

**BPU NJ No. XX Electric Service - Section IV Fortieth Revised Sheet Replaces Thirty-Ninth Revised Sheet No. X**

**COMMERCIAL ELECTRIC VEHICLE CHARGING PROGRAM  
RIDER "CEVCP"**

**AVAILABILITY** – Available only for non-residential customers. Each customer is allowed to be on to a single offering under Rider "CEVCP": (1) Multi-dwelling Unit Charging; (2) Workplace Charging; (3) Fleet Charging, upon application by the customer and approval by the Company, qualifying non-residential customers who have purchased and installed an eligible Electric Vehicle (EV) charging station within the Company's electric distribution service territory on or after xxxx, may be eligible for two incentives: (1) rebates for installed Electric Vehicle Supply Equipment (EVSE) including telecommunication cost and associated installation costs and (2) receive an off-bill rebate to partially offset their monthly distribution demand charge. The customer agrees to provide the Company with usage data from the charger and the Company will pay the telecommunications cost to access the charging data. Rider "CEVCP" is available for Rate Schedules: "MGS-SECONDARY", "MGS-PRIMARY", "AGS-SECONDARY", "AGS-PRIMARY", and "TGS".

Application submission will begin on xxxx and terminate on xxxx. No new applications will be accepted after xxxx, and all project completion documentation must be submitted to the Company by xxxx. The demand rebate will be available beginning xxxx and will be a fixed amount and will be an off-bill rebate for the account with the eligible installed and operational L2 charging station(s). The maximum allowable term for the demand charge credit until the end of the 5-year PIV Program, or xxxx, regardless of the date of application and documentation approval.

**COMMERCIAL REBATE AND DEMAND CHARGE REBATE PROGRAMS (Offerings)**

1. **Multi-dwelling Unit Charging** – Intended for customers who own or operate condominiums and apartment complexes where dedicated parking can be made available for EVSE infrastructure. A rebate of 50% of qualified Smart Level 2 (L2) chargers and up to \$10,000 per location for the eligible installation costs from point of service connection to the charger location. This offering is limited to 200 EVSE, and 6 EVSE per customer at a maximum of 3 locations per customer. Customers would also be enrolled in the demand charge rebate.
2. **Workplace Charging** – Intended for qualified customers who own or operate office buildings or garages where dedicated parking can be made available for PIV charging infrastructure. A rebate of 50% of qualified Smart L2 chargers installed behind the meter of an existing account for qualified customers. This offering does not include any rebates for installation costs. This offering is limited to 150 EVSE, and 6 EVSE per customer at a maximum of 3 locations per customer. Customers would also be enrolled in the demand charge rebate.
3. **Fleet Charging** – Intended for fleet/light duty charging infrastructure for customers who own or operate vehicle fleets. This offering includes a rebate of 50% of qualified Smart L2 chargers installed behind the metered of an existing account for qualified customers. This offering does not include any rebates for installation costs. This offering is limited to 150 EVSE, and 6 EVSE per customer at a maximum of 3 locations per customer. Customers would also be enrolled in the demand charge rebate.

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**ATLANTIC CITY ELECTRIC COMPANY****BPU NJ No. XX Electric Service - Section IV Fifth Revised Sheet Replaces Fourth Revised Sheet No. X**

**COMMERCIAL ELECTRIC VEHICLE CHARGING PROGRAM  
RIDER "CEVCP"**

**Demand Charge Rebate:**

Demand charge credits are an off-bill rebate applied to the Customer's bill only for a portion of the maximum distribution demand charge resulting from the addition of EV chargers to the Customer's facility service and metered load. The demand charge credit amount will be calculated as 50% of the maximum nameplate capacity for new or added L2 EV chargers' times the prevailing Rate Schedule's demand charge. The demand rebate credit cannot exceed the Customer's monthly distribution demand charge. The demand charge rebate requires that the charger be put into service and available for use.

**Demand Charge Credit Structure**

EV Charging Station Type	Maximum Credit	Credit Length
Level 2 Charging Station	50% Nameplate Capacity	Until the end of the 5-year PIV Program

The customer must submit an application and documentation of the completed EV Charging station installation on the Company's EVSmart webpage in order to become eligible for the demand credit (including receipts and/or invoices of the EV chargers, as well as proof of the installation from a certified electrician). The Company's third-party vendor will determine acceptance, calculate the demand charge credit amount and communicate these results to the Customer. Chargers installed outside the utility approved tariff, Rider "CEVCP", are not available for the demand charge rebate.

**CORPORATE BUSINESS TAX (CBT)**

Charges under this rate schedule include a component for Corporate Business Taxes as set forth in Rider CBT.

**NEW JERSEY SALES AND USE TAX (SUT)**

Charges under this rate schedule include a component for New Jersey Sales and Use Tax as set forth in Rider SUT.

**TERM OF CONTRACT**

The customer agrees to make parking available for EVSE charging and to keep charging stations available for use.

**TERMS AND CONDITIONS**

See Section II inclusive for Terms and Conditions of Service.

"In accordance with P.L. 1997, c. 162, the charges in this Rate Schedule includes provision for the New Jersey Corporation Business Tax and the New Jersey Sales and Use Tax. When billed to customers exempt from one or more of these taxes, as set forth in Riders CBT and SUT, such charges will be reduced by the relevant amount of such taxes included therein."

**PRICE TO COMPARE**

A customer may not choose to receive electric supply from a third party supplier as defined in Section 11 of the Standard Terms and Conditions of this Tariff.

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**RATE SCHEDULE PC-PIV  
(Public Charging – Plug-In Vehicle Charging)**

**AVAILABILITY** – Available only for the purpose of Plug-in Vehicle (“PIV”) battery charging from Company-operated Level 2 (L2) and Direct Current Fast Charging (DCFC) public electric vehicle (EV) charging stations. All public EV charging stations will be sited on property either owned by government entities or government-associated organizations or controlled by those entities and other non-governmental entities (such as through easements, right-of-ways, or similar legal or equitable mechanisms). L2 charging stations shall cover applications with demand loads up to 19.2 kW. DCFC charging stations cover applications with demand loads greater than 19.2 kW.

The service provided under Schedule “PC-PIV” allows EV operators to charge their EV at a Company-owned public charging station. EV operators who reside either within the Company’s service territory or outside the Company’s service territory are eligible to charge their EV at a Company-owned station.

**CHARGING RATE FOR EV OPERATOR**

Charges under Schedule “PC-PIV” will be administered and billed through the Company’s third-party vendor (Network Provider) on behalf of the Company. Information on opening an account with the Company’s Network Provider is available on the Company’s website. EV operators that charge their vehicle at a Company-owned station are subject to the payment terms of the Company’s Network Provider.

Any EV operator using Company-operated public EV charging stations for the purpose of PIV battery charging shall pay for such service at the rates listed below. These rates are subject to change periodically, subject to Commission approval.

**L2 Charging Stations:** \$ x. xx per kwhr

**DCFC Charging Stations:** \$ x. xx per kwhr

Schedule “PC-PIV” is provided in conjunction with the contract for service under the applicable Rate Schedule (the Controlling Rate Schedule), as determined by the availability of each Rate Schedule. Controlling Schedule provisions apply, unless they are specifically altered herein.

**APPLICABLE RIDERS**

The applicable Riders for Schedule “PC-PIV” are determined by the Controlling Rate Schedule, unless they are specifically altered herein.

Rider “PIV-Green” provides 100% renewable energy on a mandatory basis to the Controlling Rate Schedules associated with Schedule “PC-PIV.” Rider “PIV-Green” will be included in addition to the rates stated on Rate Schedule “PC-PIV”.

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**RATE SCHEDULE PC-PIV  
(Public Charging – Plug-In Vehicle Charging)****CORPORATE BUSINESS TAX (CBT)**

Charges under this rate schedule include a component for Corporate Business Taxes as set forth in Rider CBT.

**NEW JERSEY SALES AND USE TAX (SUT)**

Charges under this rate schedule include a component for New Jersey Sales and Use Tax as set forth in Rider SUT.

**TERM OF CONTRACT**

The customer agrees to pay for plug-in vehicle charging at the point of sale.

**TERMS AND CONDITIONS**

See Section II inclusive for Terms and Conditions of Service.

"In accordance with P.L. 1997, c. 162, the charges in this Rate Schedule includes provision for the New Jersey Corporation Business Tax and the New Jersey Sales and Use Tax. When billed to customers exempt from one or more of these taxes, as set forth in Riders CBT and SUT, such charges will be reduced by the relevant amount of such taxes included therein."

**PRICE TO COMPARE**

A customer may not choose to receive electric supply from a third party supplier as defined in Section 11 of the Standard Terms and Conditions of this Tariff.

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**NON-UTILITY OWNED PUBLIC DIRECT CURRENT FAST CHARGING (DCFC)  
RIDER "NUOPDCFC"**

**AVAILABILITY** – Available only for non-residential customers with commercial owned properties. Where each property owner commits to the charger's availability for public use at all times. Rider "NUOPDCFC" is limited to 120 Direct Current Fast Chargers (DCFC) and a maximum of 30 locations, with each location limited to a maximum of 4 DCFC. Rider "NUOPDCFC" is not available to existing customers with installed DCFC. The utility will deploy and own the "make ready" work up to the point of charger connection. This includes the service connection and a meter. The DCFC will be owned and operated by the customer. Rider "NUOPDCFC" includes a rate incentive described herein. Rider "NUOPDCFC" is available for Rate Schedules: "MGS-SECONDARY", "MGS-PRIMARY", "AGS-SECONDARY", "AGS-PRIMARY", and "TGS". All other tariff surcharges and riders apply to the aforementioned Rate Schedules.

Application submission will begin on xxxx and terminate on xxxx. No new applications will be accepted after xxxx, and all project completion documentation must be submitted to the Company by xxxx. The rate incentive will be available beginning xxxx and will be determined each month as in Rider "NUOPDCFC" and will be an off-bill rebate for the account with the eligible installed and operational DCFC charging station(s). Charging stations must be put into service and avail be for use before the rate incentive in Rider "NUOPDCFC" will take effect. The maximum allowable term for the rate incentive rebate until the end of the 5-year PIV Program, or xxxx, regardless from the date of application and documentation approval.

**Rate Incentive** – The rate incentive fixes the cost of electricity for customers under Rider "NUOPDCFC" at a "Set point" of \$0.20 cents per kilowatt hour (kWh). In a given billing month an off-bill rebate is provided to the customer if the customer's monthly cost of electricity (MCE) is greater than \$0.20 per kilowatt hour, where the customer's cost of electricity in a given month is calculated as the total monthly bill costs (in dollars) divided by the total monthly bill kilowatt hours (in \$/kWh). The rebate in a given month is:

$$((\text{MCE} - \$0.20) \text{ multiplied by monthly kilowatt hours}) = \text{Monthly Rebate.}$$

The rebate will vary from month to month and will be zero when the MCE is equal to or less than the set point of \$0.20 cents per kilowatt hour.

**CORPORATE BUSINESS TAX (CBT)**

Charges under this rate schedule include a component for Corporate Business Taxes as set forth in Rider CBT.

**NEW JERSEY SALES AND USE TAX (SUT)**

Charges under this rate schedule include a component for New Jersey Sales and Use Tax as set forth in Rider SUT.

**TERM OF CONTRACT**

The customer agrees to make parking available for EVSE charging and to keep charging stations available for use.

**TERMS AND CONDITIONS**

See Section II inclusive for Terms and Conditions of Service.

"In accordance with P.L. 1997, c. 162, the charges in this Rate Schedule includes provision for the New Jersey Corporation Business Tax and the New Jersey Sales and Use Tax. When billed to customers exempt from one or more of these taxes, as set forth in Riders CBT and SUT, such charges will be reduced by the relevant amount of such taxes included therein."

**PRICE TO COMPARE**

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**PIV COMMUNITY AND TRANSIT CHARGING PROGRAMS  
RIDER "CTCP"**

**AVAILABILITY** – This rider describes the (3) Plug-in-vehicle Community and Transit Programs available to customers. Interested Customers should submit an application with the Company to see if they are eligible to participate in any of the (3) Programs as described herein. The Company at its discretion will determine if and how much funding / grants will be awarded to the applicant.

**INNOVATION FUND**

The innovation fund is intended to support transportation electrification area needs within the Company's service territory. Projects include but are not limited to: PIV Car Sharing, Vehicle to Grid charging, port electrification, and battery / resiliency pilots. Each potential project must be related to vehicle electrification. The proposed awards under the Innovation fund would be a grant that would be limited to 50% of the net project amount after applying all other applicable incentives, grants, awards and discounts.

**ELECTRIC SCHOOL BUS FUND**

The Electric School Bus Fund is for public K-12 school districts within the Company's service territory. This Fund will be limited to 20 electric school buses and \$250,000 for the incremental cost of an electric school bus compared to a traditional diesel-based bus vehicle. There is a limit of two buses per district. In addition, The Electric School Bus Fund will provide the required charging infrastructure for the electric school buses to a maximum of \$25,000 per Electric Vehicle Supply Equipment (EVSE) and a maximum of 2 EVSE per district.

**NEW JERSEY TRANSIT BUS ELECTRIFICATION**

The New Jersey Transit Bus Electrification Program within RIDER "CTCP" is targeted at New Jersey Transit bus depots in the Company's service territory. The bus depots in the Company's service territory include depots in the following Townships (1) Egg Harbor Township and (2) Washington Township. This offer is exclusive to one bus depot within the Company's service territory as selected by New Jersey Transit, and provides up to \$2.5 million in funding for electrification of a bus depot.

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**GREEN ADDER  
RIDER "PIV-GREEN"**

**AVAILABILITY** – This rider provides 100% renewable energy on an opt-in basis to Schedules "RS-PIV", and on a mandatory basis to the Controlling Rate Schedules associated with Schedule "PC-PIV".

This rider is a dollar per kilowatt-hour rate and is applied to the Customer's billed kilowatt-hours. This rider will be updated based on the most up-to-date market prices, the New Jersey Renewable Portfolio Standards, and include a true-up from the difference between the previous 12-month period of revenues received from Rider "PIV-GREEN" and expenses (from Renewable Energy Credit purchases) with short-term interest. The true-up portion of the charge (in dollars per kilowatt hour) will be determined by dividing the difference in revenues and expenses by the total annual forecast kilowatt hour sales. The charge reflected within RIDER "PIV-GREEN" will be the sum of (1) the most up-to-date market prices and (2) the true-up charge as described herein. Rider "PIV-Green" will be updated on or about February 1<sup>st</sup> of each year.

The current applicable Rider "PIV-Green" rate is equal to \$0.054300 per kilowatt-hour.

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**ATLANTIC CITY ELECTRIC COMPANY**

**BPU NJ No. XX Electric Service - Section IV Fifth Revised Sheet Replaces Fourth Revised Sheet No. X**

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**GREEN ADDER  
RIDER "PIV-GREEN"****CORPORATE BUSINESS TAX (CBT)**

Charges under this rate schedule include a component for Corporate Business Taxes as set forth in Rider CBT.

**NEW JERSEY SALES AND USE TAX (SUT)**

Charges under this rate schedule include a component for New Jersey Sales and Use Tax as set forth in Rider SUT.

**TERM OF CONTRACT**

The customer agrees to pay Rider "PIV-Green" to receive 100% renewable energy. The customer may opt-out of Rider "PIV-Green" at any time, and will take effect in the next billing cycle.

**TERMS AND CONDITIONS**

See Section II inclusive for Terms and Conditions of Service.

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**PRICE TO COMPARE**

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## Schedule (MTN-R)-4

## **PC44 – Rate Design Working Group**

### **PHI and BGE (“Exelon Utilities”) Comments on Rate Design Principles Proposed by EVSE Vendors**

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## I. Rate Design Principles and Objectives

Commercial customers that host high voltage electric vehicle (“EV”) chargers typically receive electric service via a rate schedule that includes a demand charge rate component, which reflects the customer’s cost impact on system capacity. Due to the low market penetration of EVs as of present, the Exelon Utilities recognize that this demand charge can hinder the economic incentive to invest in additional EV infrastructure. The Exelon Utilities seek to work collaboratively with EVSE vendors to develop rate mechanisms that will encourage new charger deployment, thereby reducing barriers to EV acquisition and supporting the State of Maryland’s zero-emission vehicle deployment goals. These rate mechanisms should be designed in accordance with the following principles:

- 1) **Follow the principle of cost causation.** As with all other electric rates, EV charger rates should be reflective of the underlying cost to provide service. The demand charge, for instance, sends a cost-causative price signal to customers reflecting historical embedded infrastructure costs. While temporary measures to reduce the impact of demand charges may make sense to support public policy goals, the demand charge is an important cost-based price signal that should not be stricken from rates.
- 2) **Design rates based on historic embedded system costs.** Electric rates among different rate classes should be designed in a consistent manner to avoid implicit interclass subsidies. There is longstanding Commission precedent setting electric rates for all customers based on historic embedded system costs using each class’s non-coincident peak demand. While it is rare that a single new customer drives the cost of serving a customer class, designing rates to recover historic embedded costs ensures that all customers are on an equal footing, and avoids introducing interclass inequities that would result from setting rates for one class based only on marginal costs.
- 3) **Employ explicit subsidies to achieve policy goals, where appropriate.** To the extent that subsidies are deemed appropriate in order to support public policy goals, such as the State of Maryland’s zero-emission vehicle deployment goal, explicit subsidies should be employed. The impact of these subsidies should be both traceable and reportable to the Commission. This will better enable the Commission, the utilities, and other stakeholders to assess the impact of these subsidies and propose adjustments as needed.

## II. Requested Data and Metrics

In order to design a solution that both adheres to established rate-making policy and addresses the EVSE vendors’ concerns, the Exelon Utilities will need to gain a better understanding of the current EV charger portfolio. This will require charging companies to provide the following data:

- Customer account numbers for EV charger hosts;
- EV charger types and quantities deployed;

- Rated capacity of deployed EV chargers;
- EV charger locations;
- EV charger load profiles; and
- Rate schedules currently utilized by EV charger hosts.

### III. Questions for the Work Group

Following the last PC44 EV work group meeting on May 5, 2020, Amanda Best requested that all parties identify any issues or questions that would be helpful to future discussions. The Exelon Utilities identified the following two questions for the working group:

- 1) The Exelon Utilities request guidance on whether the Commission is seeking EV charging rate design options that provide temporary demand charge relief through transparent and limited subsidies, and which serve to “bridge the gap” to market maturity, as described by the Exelon Utilities below.
- 2) What do other stakeholders, and in particular the EVSE vendors, view as a sustainable steady state for EV charger rate designs? As the EV market matures, is charger utilization expected to increase to the point where the demand charge is less impactful on the economics of EV chargers? In the EVSE vendor rate design principle entitled “Provide Rate Design Options,” the vendors state that “as EV adoption increases, the utilization of chargers will grow and more closely resemble standard commercial loads.” If EV charger loads resemble standard commercial loads once EV market maturity is reached, the Exelon Utilities believe that the current rate offerings will provide appropriate cost-causative price signals for EV chargers.

### IV. Response to Rate Design Principles Offered by EVSE Vendors

#### 1. Time-varying Rates

##### **EVSE Vendor Description**

TOU pricing is essential to ensure that EV charging meets system needs. All levels of the electric system - generation, transmission, and distribution - exhibit loads that vary with time. Cost-based, time-varying, volumetric rates can be designed to cover most utility costs. This is particularly important given that utilities in many states are relying more heavily on renewable generation resources (e.g. wind & solar) whose output also varies by time.

##### **Exelon Utilities’ Position: Mixed**

The Exelon Utilities disagree with the EVSE vendors’ assertion that all levels of the electric system – generation, transmission, and distribution – exhibit loads that vary with time, and that therefore time-varying volumetric rates are appropriate to capture each of these costs. While it is true that loads vary with time, underlying distribution system costs do not vary. The distribution system is sized in order to meet peak demand; therefore, the cost of those systems is driven by peak demand, rather than by the instantaneous demand at a given time of day. Underlying distribution system

costs can be reduced at all hours by lowering peak system load.<sup>1</sup> As distribution system costs do not vary based on time of day, recovering these costs through time-varying volumetric rates would not follow the principle of cost causation as outlined in the Exelon Utilities' Rate Design Principles and Objectives above.

The Exelon Utilities agree that TOU pricing has the potential to better align electricity rates with underlying system costs, especially in regard to commodity pricing where the Exelon Utilities have offered TOU pricing for a number of years. For residential customers who do not currently have a demand charge component on their bills, TOU rates may also create a price signal that encourages customers to lower their demand when system usage is near its peak. In fact, PHI and BGE are currently operating residential TOU pilots to assess the effectiveness of TOU rates at encouraging load shifting, and have deployed TOU generation rates for residential electric vehicle charging.

In contrast, EV charging customers do have a demand charge component on their bills, and are therefore already receiving a price signal which encourages minimizing coincident demand. With the current low levels of EV market penetration, this demand charge can represent a significant cost hurdle for EV chargers. The demand charge nevertheless constitutes a critical mechanism that ensures electric rates capture the underlying cost of providing service and pass that price signal on to customers in the form of cost-causative rates. The Exelon Utilities support temporary mechanisms that improve the economics of new EV charger deployment, and which phase out as EV market penetration and charger utilization increases.

## **2. Cost-based Rates**

### **EVSE Vendor Description**

Rates optimized for EVs should be cost-based and do not need to be subsidized. They should reflect the utility's underlying time-varying marginal costs, in order to encourage EV drivers to charge at costs that accurately reflect grid conditions. Recovery of marginal costs to serve, without costs associated with existing infrastructure or unrelated utility programs, may best meet policy goals to promote transportation electrification and fuel switching incentives. This will allow EV drivers to realize the fuel cost savings that are a primary motivator of EV purchases, and, by encouraging higher EV penetration, will increase the incremental electric revenues that benefit all ratepayers.

### **Exelon Utilities' Position: Disagree**

The Exelon Utilities strongly disagree with EV charging companies' contention that developing rate structures based around the marginal cost to serve EV charging customers may be appropriate. As discussed in the Exelon Utilities' rate design principles above, in order to ensure interclass equity all electric rates must be developed using the same underlying methodology (i.e., all rates set based on marginal costs, or all rates set based on historic system costs). There is longstanding

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<sup>1</sup> As underlying system costs will only drop if peak load is reduced, it is important to ensure that selected rate mechanisms do not simply shift the system peak to another hour without actually reducing peak system load.



Commission precedent setting electric rates for all customers based on historic embedded system costs using each class's non-coincident peak demand. Most new customers, regardless of customer class, do not drive the cost to serve that class; the rates paid by these customers are nevertheless set based on historic embedded costs. Designing electric vehicle charging rates that collect only marginal customer costs, rather than historic embedded costs, would violate the fundamental ratemaking principle of ensuring interclass equity.

The EVSE vendors contend that marginal cost recovery may best meet policy goals to promote transportation electrification and fuel switching. The Exelon Utilities support efforts to promote the State of Maryland's public policy goals; however, marginal cost pricing for a single rate class has the potential to create unintentional and ill-defined subsidies. As discussed in the Exelon Utilities' rate design principles, any subsidies deemed prudent to support public policy goals should be deliberate, targeted, and traceable.

### **3. Minimize Demand Charges and Maximize the Use of TOU Volumetric Rates**

#### **EVSE Vendor Description**

Minimize demand charges and maximize the use of TOU volumetric rates, particularly when utilization of the charging infrastructure is low. This does not create a cost shift if TOU rates are cost-based and represent incremental revenues. Emphasizing accurate TOU rates over demand charges ensures that operators of DC fast chargers focus on encouraging their customers to charge at times that provide the most system benefits, rather than trying to minimize demand charges.

#### **Exelon Utilities' Position: Disagree**

The demand charge reflects the cost of building a distribution system capable of meeting peak demand, and passes those costs on to customers. This price signal is critical to ensure that electric rates are cost-based, in line with Rate Design Principle #2. Given that the distribution system costs recovered through the demand charge are based on peak demand, rather than energy sales, recovering those costs through a volumetric rate would distort the price signal to customers. For example, envision two customers with very different load profiles. Customer A has a demand of 100 kW for 1 hour, while Customer B has a demand of 25 kW for 4 hours. While both customers will consume 100 kWh, Customer B has a much lower distribution system impact than Customer A. If demand charges are converted into volumetric rates, both of these customers would pay the same amount for demand-related costs. This undermines the cost-causative nature of the current demand charge.

It is also important to recognize that the revenue requirement associated with the demand charge would not be lessened by converting to TOU volumetric rates. Revenues currently collected through the demand charge would be incorporated into volumetric rates. In a market with low EV charger utilization, this may result in a significant increase in volumetric rates which could harm, rather than help, the economics for existing and new EV chargers. This issue is further exacerbated if on-peak rates are designed to recover a majority of the demand charge revenue requirement. In such a scenario, even more upward pressure would be placed on on-peak volumetric rates. The definition of on-peak hours could be broadened so as to spread the impact of this revenue

requirement over a larger number of hours, but doing so may limit customers' ability to shift usage to off-peak periods, undermining the effectiveness of the rate as a whole.

#### **4. Limit Monthly Fixed Charges**

##### **EVSE Vendor Description**

Limit monthly fixed charges to the cost of the customer-specific facilities used to provide access to the grid (i.e. to the service drop and meter, plus ongoing costs for customer service & billing).

##### **Exelon Utilities' Position: Agree**

The current fixed customer charges collect each of the cost items identified (i.e., service drop and meter, and ongoing costs for customer service and billing). The EVSE vendors did not explicitly identify any costs that are currently included in utility fixed charges, and which the EVSE vendors feel are inappropriate to recover through fixed charges.

#### **5. Limit the Use of Non-coincident Demand or Subscription Charges**

##### **EVSE Vendor Description**

While there has been significant recent attention to "subscription" capacity rates, in which customers specify - and pay for - blocks of demand in advance, these rates are often less than optimal. In these rate designs, there is no variation in charge below the subscription level, but significantly punitive charges above it. The structure is admirably simple; however, in the early stages of market development, where usage even over the course of a single year can be difficult to predict, the result will be a demand charge in which the customer must always overestimate - and overpay for - their demand creating a punitive and counterproductive rate design.

##### **Exelon Utilities' Position: Disagree**

As explained in the Exelon Utilities' rate design principles, non-coincident demand charges reflect the underlying cost of building a distribution system capable of meeting peak demand. These charges are then passed on to customers as cost-causative price signals, and are necessary to ensure that rates are cost-based.

The EVSE vendors oppose subscription demand charges, asserting that the subscription model does not reliably provide demand charge relief in the early stages of market development. The Exelon Utilities do not contemplate subscription rates in these comments, and do not take a specific position with respect to subscription rates at this time.

#### **6. Provide Rate Options**

##### **EVSE Vendor Description**

Provide rate options, including the ability to switch to a standard commercial rate schedule. As EV adoption increases, the utilization of chargers will grow and more closely resemble standard commercial loads. Providing rate options will give operators more tools to adapt their pricing to

both customer preferences and system needs, as their load factor and diurnal profile change. Additionally, charging is not a one-size -fits-all application. Rural, standalone, low usage, high capacity chargers have different economics and cost causation than suburban ones served on the host power of a large retailer. Enabling choice among qualifying rates – throughout a charger’s lifecycle – optimize economics while enabling near-term investment.

### **Exelon Utilities’ Position: Mixed**

The Exelon Utilities recognize and agree with the EVSE vendors in that as EV adoption increases, the utilization of chargers will grow and the ability to more accurately forecast load factors should increase. The Exelon Utilities also recognize that by offering an assortment of rate mechanisms to commercial customers, the economics of both short-term and long-term investment in infrastructure will be optimized. While the Exelon Utilities anticipate standard commercial rate schedules will be effective when EV market penetration and charger utilization increases, alternative rate mechanisms that improve the near-term economics of new charger deployment may be valuable in the interim.

Commercial customers that host high voltage EV chargers typically receive electric service via a rate schedule that includes a demand charge rate component which reflects the customer’s cost impact on system capacity. Due to the low market penetration of EVs as of present, this demand charge may exceed the cost of energy usage and can hinder the economic incentive to invest in additional EV infrastructure. The premature creation of a commercial EV rate class would require a permanent modification to the demand charge in order to incentivize charger utilization and investment. Reducing or eliminating the demand charge would undermine the cost-causative structure of rates and result in improper price signals when the EV market eventually reaches maturity. The creation of an improperly designed commercial EV rate schedule that did not appropriately capture and convey costs with accurate price signals (i.e. one that that eliminated the demand charge or moved towards marginal cost pricing) would be a permanent solution to the temporary problem of low market EV penetration and charger utilization. Furthermore, this approach would create long-term issues of its own related to interclass subsidization, inaccurate price signals, etc...

In order to address the issue posed by demand charges coupled with low utilization for commercial customers in the short term, the Exelon Utilities recommend incorporating temporary demand charge incentives which phase out as EV deployment grows and charger usage increases. These include the time-limited deployment of demand charge credits which offset the demand charge associated with EV chargers and “set point” caps on energy costs for charging stations. The demand charge credit is being piloted by the Exelon Utilities and offers a discount of up to 50 percent of the nameplate capacity for new EV charger installations for non-residential customers located in Maryland.

Another rate mechanism suggested for commercial EV customers is the “set point” method, which has been proposed by ACE NJ as part of its PIV Charging Program proposal. In order to mitigate high demand charges in relation to the charger’s load factor, the customer’s total bill is divided by the customer’s kWh usage. If the resulting cost per kWh exceeds the utility-specific “set point”

then the bill is reduced to the customer's kWh usage multiplied by the "set point" cost per kWh through either an on-bill adjustment or an off-bill credit. This would allow for competitive pricing during an initial period of low charger utilization and alleviate the financial barrier to entry imposed by the demand charge on EV charging vendors.<sup>2</sup>

In addition, to the extent that the utilities identify EV markets with slower maturity rates upon deployment of these temporary demand incentives (such as rural or low-income areas), adjustments can be made to the rate mechanisms in order to enhance program interest as well as promote infrastructure investment. These proposed credits should be targeted to support EV charging stations with low utilization, rather than those already operating at or near intended capacity.

## **7. Leverage Previous Rates Designed to Industry Specific Load Shapes**

### **EVSE Vendor Description**

Many Commissions already have rates in place designed to accommodate similarly "spiky" loads – for example, agricultural uses – where rate designs intended for commercial use had disproportionate impacts on off-peak users. Simply maintaining DCFC eligibility for "low Load Factor" or "Pivot Irrigation" rates can be a simple, effective adaptation.

### **Exelon Utilities' Position: Mixed**

The Exelon Utilities currently offer rate schedules that utilize load shapes specific to the service requirements of the customers being served (i.e., primary and secondary service based on customer voltage requirements). The resulting rate schedules are designed to recover costs based on the average load profile of the respective primary or secondary designation within the respective rate class. This allows for equitable embedded cost recovery across ratepayers and provides customers with rate options in order to match their desired electricity needs. The Exelon Utilities are open to working with the Commission in order to develop rate schedules specific to industry and jurisdictional load shapes and which adhere to established rate-making principles. However, the Exelon Utilities also acknowledge that if new EV rate schedules are developed, existing industry-specific rate designs, such as irrigation as referenced in the EVSE vendors' rate design principle, may not be directly portable as there is significant variation in industry-specific load shapes. EV rate design will depend on local market maturity and jurisdictionally specific factors that will further limit the effectiveness of directly adopting existing industry-specific rates designs.

The Exelon Utilities disagree with the EVSE vendors' characterization of current rate designs disproportionately impacting certain customers; commercial rate designs provide price signals to rate payers proportionate to underlying system costs. In the narrow case of EV chargers, the demand charge may only be considered "disproportionate" when compared to volumetric charges during periods of minimal charger utilization, not when compared against the actual distribution

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<sup>2</sup> These are the same principles which guided development of ACE NJ's proposed 20 cent/kWh set point. Gabel Associates developed a pro forma business model for the economics of public DCFC chargers, encompassing equipment and installation costs, maintenance costs, profitability requirements, and utilization rates.

system costs being conveyed through the demand charge. As EV charger utilization increases, the relative proportion of the demand charge as compared to volumetric charges on customer bills will decrease.

## **8. Preserve the Existing Infrastructure Base with Universal Application of Rates**

### **EVSE Vendor Description**

All rates intended to expand charging infrastructure should apply to the installed base as well. In anticipation of significant increases in demand, private providers have already installed thousands of charging stations nationwide. Hundreds of stations will approach their end of life of the original charging equipment in the next five years, and/or were built with “future proofing” enabling significant expansion.

### **Exelon Utilities’ Position: Disagree**

The Exelon Utilities recognize the EVSE vendors’ desire for retroactive application of subsidies on EV infrastructure previously installed; however, this is ultimately a Commission policy decision. The current implementation of the demand charge credit by the Exelon Utilities as approved by the Commission is limited to incentivizing new EV charging installations with no application to the existing infrastructure base.

## **9. Available to All Electric Vehicle Charging Use Cases**

### **EVSE Vendor Description**

There are a variety of commercial EV use cases and charging applications including workplace, public, and fleet charging. New commercial EV rates should be available to all commercial charging customers, regardless of their charging use case, in order to send price signals about the best time to charge, and to encourage additional investments in EVs.

### **Exelon Utilities’ Position: Mixed**

While the Exelon Utilities do not necessarily oppose offering EV charging rate options across all use cases and charging applications, these rates may not be equally effective for each application. For example, a fleet charging generation rate may effectively incentivize night-time charging in applications where night-time charging is feasible but may be less effective at shifting load off of peak daytime hours for applications where daytime fleet charging is required. Ultimately, effective rate design policy results in rates that reflect underlying costs and that provide commercial customers with a variety of price signals to effectively manage load and reduce costs.

## **V. Utility Recommendations**

Based on the overarching rate design policies as summarized in the remarks above, the Exelon Utilities submit the following recommendations to the work group for further discussion.

The Exelon Utilities recognize that in order to support Maryland's transportation electrification goal of 300,000 zero-emission electric vehicles by 2025, EV program offerings should be designed to incentivize EV infrastructure deployment by means of explicit subsidization. The Exelon Utilities acknowledge that the current demand charges coupled with low charger utilization may negatively affect the underlying economics of public charging business models and thereby create a significant obstacle to new charger deployment. Rather than seeking to permanently reduce or eliminate the cost-causative price signal provided by the demand charge, the Exelon Utilities instead support mechanisms that will "bridge the gap" to higher levels of EV market penetration, and which phase out once EVs are more pervasive and charger utilization increases. The Exelon Utilities recommend the use of explicit subsidies intended to target specific public policy goals in EV rate design and which yield results that are traceable and reportable to the Commission. Recommended subsidies such as the demand charge credit and the "set point" method are designed to temporarily bridge EVSE vendors to future charger utilization goals and are explicit, traceable, and reportable to the Commission.

The demand charge credit is an easily implementable solution approved by the Commission that incentivizes charger deployment while avoiding the long-lasting negative impact on price signals caused by directly modifying the demand charge, particularly when such modifications violate the fundamental ratemaking principle of cost causation. The Exelon Utilities acknowledge that EVSE vendors with existing EV infrastructure are not eligible to receive the benefits of the credit as the Commission's intention is to incentivize new charger deployment. If in the future the Commission determines that a modification of the credit's application should be further explored, the Exelon Utilities are open to expanding the credit's eligibility to existing infrastructure.

The "set point" method is an off-bill incentive that reduces the effective cost of electricity to a determined "set point", ultimately mitigating the high demand charge incurred if a charger has a low load factor. The "set point" method also ensures that chargers with high utilization (i.e., those in areas with high EV deployment) are excluded from the subsidy's benefit as the \$/kWh cost for chargers with high utilization would fall below the "set point," and therefore would not be eligible for the off-bill credit.

Lastly, if in the future the Commission deems an EV-specific rate class appropriate, rate schedules should be designed to recover and allocate based on the historic embedded costs using each class's non-coincident peak demand, rather than marginal costs, thereby eliminating the potential for unintended interclass subsidization.

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4 **BEFORE THE NEW JERSEY**  
5 **BOARD OF PUBLIC UTILITIES**

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7 **DOCKET NO. EO18020190**

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12 **REBUTTAL TESTIMONY**  
13 **OF**  
14  
15 **MARK WARNER**  
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17  
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20 **ON BEHALF OF**  
21  
22 **ATLANTIC CITY ELECTRIC**

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27  
28 **October 19, 2020**

1 **I. INTRODUCTION AND PURPOSE**

2 **Q1: What is your name and business address?**

3 **A1:** My name is Mark Warner and my business address is 417 Denison Street, Highland Park,  
4 New Jersey, 08904.

5 **Q2: Are you the same Mr. Warner who previously filed testimony and exhibits in this**  
6 **proceeding?**

7 **A2:** Yes, I am.

8 **Q3: Mr. Warner, what is the purpose of your rebuttal testimony?**

9 **A3:** The purpose of my rebuttal testimony is to respond to certain recommendations and  
10 conclusions of New Jersey Rate Council Witness Ezra D. Hausman, PH.D, regarding the  
11 Benefit-Cost Analysis ("BCA") I prepared and included in my direct testimony for Atlantic  
12 City Electric's ("ACE") suite of electric vehicle ("PIV") programs.

13 **Q4: How is your rebuttal testimony organized?**

14 **A4:** Witness Hausman raises a series of technical issues with the benefit/cost BCA on numbered  
15 pages 20 through 36 of his testimony. I will predominantly address each of these issues  
16 individually, in approximately the order they were raised in the Witness Hausman's  
17 testimony. In several cases, where a particular issue was raised in several places, I will  
18 treat those issues together. All references to page numbers are relative to the confidential  
19 form of his testimony.

20 **Q5: In rebuttal testimony being provided by other witnesses, some changes are being**  
21 **proposed to ACE's program design. Does this impact the rebuttal testimony you are**  
22 **providing?**

23 **A5:** Yes, but to a limited degree. The BCA outcomes presented in my original testimony  
24 depend on details of the program design, and if program costs, program size, or market  
25 impacts change, the BCA outcomes could change. An update to the BCA may be necessary  
26 to bring it into alignment with the proposed program changes. However, my rebuttal



1 testimony below responds to the direct testimony provided by Witness Hausman, which  
2 reflects my original BCA analysis and associated testimony. Most of his testimony, and  
3 my rebuttal, are related to matters of methodology. Changes in program design will impact  
4 the *inputs* to the model potentially leading to revised results, but the *methodology* – as  
5 represented in the following rebuttal – would remain the same for both the original analysis  
6 and any revisions based on program design changes. The following methodology-focused  
7 rebuttal is therefore still relevant. For continuity, all references to the Offers in the  
8 following rebuttal testimony refer to the Offers as defined in the original filing.

## 9 II. REBUTTAL TESTIMONY

10 **Q6:** (Issue 1, Page 23, Line 6) Witness Hausman asserts that the market-wide Societal Cost  
11 Test (“SCT”) is not relevant to the Company’s specific proposals. Why was the  
12 market-wide SCT test performed, and how would you respond to Witness Hausman’s  
13 concerns?

14 **A6:** I provided the market-wide SCT to address important threshold questions that establish  
15 policy context for consideration of proposed utility PIV programs. As noted by Witness  
16 Hausman in his testimony (page 23, line 7), the purpose of the SCT is to quantify the net  
17 benefit of PIVs *overall*. That was how I presented that test in my testimony, and  
18 Hausman’s summary is consistent with my intended purpose. I provided that perspective  
19 since if PIV adoption overall were not beneficial, than utility PIV programs intended to  
20 support such adoption might be of limited value. The market-wide SCT – which I  
21 acknowledge addresses the value of electrification overall, not just the part of the market  
22 directly impacted by the utility programs – was developed to address this threshold  
23 question. Furthermore, the SCT considers the net-benefit of PIV adoption overall *even*  
24 *when the Company’s proposed programs are included as a cost*. This is an important  
25 metric – potentially, a proposed utility program could be so expensive that even after  
26 accounting for all PIV benefits that are societal in scope, the benefit/cost ratio would be  
27 less than one. The SCT provided in the analysis clarifies that is not the case for the State  
28 of New Jersey (and within the ACE territory specifically). I would therefore clarify  
29 Hausman’s statement to suggest that “electric vehicles overall provide societal benefit,

1 even when utility program costs are included”, which is how I represented it in my  
2 testimony. Finally, the SCT with “natural” and “managed” boundary conditions provides  
3 perspective on the value of managed charging overall. To re-affirm my original testimony,  
4 the SCT is provided to a) provide policy context for vehicle electrification overall, which  
5 is an important threshold question for consideration of utility PIV programs, b) it  
6 determines whether there is societal benefit even when the cost of the Company’s proposed  
7 offerings are included in that test, and c) it quantifies the public benefit that would result if  
8 managed charging is widely adopted compared with natural charging. I offered this  
9 analysis based on my expectation that the Board would benefit from those three  
10 perspectives.

11 **Q7: (Issue 2, Page 24, Line 11) Witness Hausman’s asserts that there is already ample**  
12 **economic reward for those purchasing PIVs, and that therefore Utility incentives are**  
13 **unnecessary to make PIVs economically attractive. Why do you believe Utility**  
14 **incentives are a necessary part of PIV market development as modeled in your**  
15 **analysis?**

16 **A7:** Most of the Company’s programs are not focused on making “... PIVs economically  
17 attractive”, and so I do not believe objections on that basis are relevant. Specifically, a)  
18 several of the Utility’s programs (Offers 1, 2, 3) are focused on shifting vehicle charging  
19 to off peak times in order to mitigate load impact and avoid costs for ratepayers, b) other  
20 programs (offer 7, 8, 9), are focused on non-economic barriers such as range anxiety. As  
21 noted in my original testimony, each of the utility offers impact the market in a different  
22 way, and in most cases, those impacts are not focused on improving PIV economics.

23 **Q8: (Issue 3, Page 24, Line 12) Is Witness Hausman’s assertion that in the original**  
24 **ChargEVC study “Mr. Warner... projects a much higher level of vehicle adoption in**  
25 **New Jersey but nowhere predicates this growth rate on the offerings proposed by**  
26 **ACE” accurate?**

27 **A8:** It is an accurate statement, but misleading. The study referenced was published in January  
28 of 2018, before any utility filings had been filed. It would have been inappropriate to  
29 speculate about such filings explicitly at that time. However, that study did cite the

1 importance of residential managed charging, and the critical role that public fast charging  
2 would play in achieving adoption. In fact, the study concludes that without addressing  
3 range anxiety concerns, higher levels of growth are unlikely to be attained. Both  
4 residential managed charging and public charging market needs, among others, are being  
5 addressed in the ACE program.

6 **Q9: (Issue 4, Page 25 – Line 1 to 11) In several sections, Witness Hausman asserts that**  
7 **neither the Utility nor I establish a cause-effect connection between the Utility**  
8 **programs and PIV adoption. Do you agree with this characterization?**

9 **A9:** No. First, as noted above, in several cases the utility programs are not intended to increase  
10 adoption, they are intended to mitigate grid impact. So whether they increase adoption or  
11 not is not relevant. Second, in the cases where the offers do specifically increase adoption  
12 – such as the multi-family solution (Offer 4) and the public charging solutions (Offers 7,  
13 8, & 9), both my analysis and Company identify the availability of that charging  
14 infrastructure as an inducement to adoption. In my direct testimony, on page 31 line 6, I  
15 state that “Many consumers that cannot count on a routine charging solution at home will  
16 simply choose not to drive a PIV, and the absence of chargers in the multi-family  
17 environment is therefore a major barrier for those consumers. Offering 4 specifically  
18 addresses a need not being met by the competitive market...”. Regarding public charging,  
19 in its original filing the Company represents that it is providing the public charging  
20 solutions to address range anxiety concern, and to thereby increase adoption by mainstream  
21 consumers. In a recent poll by Eagleton in New Jersey (2019), 56% of respondents cited  
22 being “worried about running out of power on the road” as a major reason why they would  
23 not choose a PIV. The recent Eagleton poll is attached to this testimony as Schedule (MW-  
24 R)-1. The Company’s public charging programs are intended to respond to that concern,  
25 based on the clear connection between the availability of public charging and adoption.

1 **Q10: (Issue 6, Page 28, Line 12) In his testimony, Hausman calculates that projected**  
2 **savings would total \$1,024 per participant-year over the life of the Offer 2 program.**  
3 **How were the benefits of the off-peak program calculated and how do they differ**  
4 **from Hausman's?**

5 **A10:** I do not believe Witness Hausman's back-of-the-envelope calculation is correct, but more  
6 importantly, he conflates utility bills paid by individual customers with system-wide costs  
7 induced by aggregate charging behaviors. Regarding the calculation, the number of  
8 participant-years in the program is 1850 (from 2020 – 2027), and the projected savings per  
9 participant-year is \$751, not \$1,024. Regardless, he compares this system-wide impact  
10 with the average utility bill of an individual residential customer. I do not think it is  
11 reasonable to compare a system-wide avoided cost that impacts all ratepayers with the bills  
12 paid monthly by a single customer – it appears unreasonable because a comparison is being  
13 made between costs applicable to all ratepayers and a single customer's utility bill. The  
14 projected savings, which in this case results from avoided cost increases realized by  
15 shifting load off-peak *at the PJM coincident peak time*, are based on capacity and  
16 transmission costs as allocated to the ACE utility (and hence its customers). I believe,  
17 however, that Witness Hausman's calculation, once corrected, illustrates the  
18 disproportionate impact that increasing loading, at peak time, can have for all ratepayers.  
19 I would offer similar comments to an equivalent analysis Witness Hausman provides for  
20 Offer 3. I believe that recommendations that Witness Hausman makes based on this false  
21 comparison should be discounted.

22 **Q11: (Issue 7, Page 29, Line 14) When considering by treatment of the "Dilution Effect",**  
23 **Witness Hausman asserts my analysis assumes that "... selling additional kwhr...**  
24 **results in no additional costs other than the electricity itself...", and that "The**  
25 **premise is that the utility would not have to invest in additional infrastructure". Can**  
26 **you clarify what the Dilution Effect is, and how the potential for additional were**  
27 **factored into your analysis?**

28 **A11:** Yes. The "dilution effect" is the impact that increased kwhr-consumption has on the unit  
29 costs of service delivery for all ratepayers. The revenue requirements for the delivery  
30 component of a customer's bill is tied to embedded cost of the distribution infrastructure.

1 Those costs are allocated across the volume of kwhrs served by that infrastructure, and  
2 when that volume goes up the average unit cost goes down. PIV charging induces this  
3 impact for all ratepayers since the increased volume associated with vehicle charging  
4 dilutes those embedded costs across a larger volume. Essentially, every extra dollar spent  
5 by a PIV driver on charging is a dollar that all other ratepayers don't have to pay to recover  
6 embedded cost, and determination of this factor is an essential part of the BCA. Witness  
7 Hausman's assertion that my analysis doesn't account for potential additional costs is  
8 incorrect – because the analysis does allow for additional costs. For example, when  
9 considering dilution for the full population of PIVs in the territory (consistent with his  
10 reference to the “PIV additions mandated by the PIV Act”), additional costs are handled  
11 explicitly in the SCT test through inclusion of both potential grid reinforcement costs, and  
12 the costs of the utility PIV programs. Similarly, in the offer-specific tests dilution is only  
13 considered when a particular offer directly results in increased volume (such as with the  
14 public chargers), and in those cases the cost of the associated programs are considered.  
15 Witness Hausman's assertion that I am accounting for a benefit without the associated costs  
16 is factually incorrect. Witness Hausman contradicts his own assertion in the following  
17 question when he acknowledges that I accounted for the potential for transformer upgrades.

18 **Q12: (Issue 8, Page 30, Line 16) Witness Hausman asserts that “Mr. Warner’s workpaper**  
19 **suggest that the threshold of 2.7 times the number of single-phase transformers would**  
20 **not be reached during his entire study period... so no PIV-related transformer**  
21 **upgrades are required...”. Does that characterization accurately reflect how your**  
22 **analysis was done?**

23 **A12:** No. Independent of whether Hausman feels that 2.7 is an appropriate factor (addressed  
24 separately in the response below), I believe his conclusion is incorrect. The utility has  
25 represented that there are 128,853 single phase transformers in its territory. Multiplying  
26 that number by 2.7 yields 347,903 PIVs before systemic upgrades would be required. I  
27 stand by my claim that even if the state meets its goal of 330K vehicles in the entire state  
28 by 2025, there will not be more than 347,903 PIVs in the ACE territory during the study  
29 period.

1 **Q13: (Issue 9, Page 31, Line 2) Witness Hausman finds your use of the 2.7 grid upgrade**  
2 **factor to be an unrealistic projection, and he asserts that “I cannot prove this**  
3 **assumption to be in error, but it is far from the outcome that I would expect...”.**  
4 **Where does this factor come from?**

5 **A13:** The grid upgrade factor is an engineering parameter that is useful when doing a territory-  
6 wide analysis of potentially loading impacts induced by PIV charging. It represents the  
7 average number of PIVs that could be charging simultaneously on a single-phase  
8 residential transformer, which when scaled across the entire territory, force the need for  
9 systemic grid upgrades. The factor of 2.7 (in the natural charging case) used in analysis is  
10 an engineering heuristic I have developed based on experience with PIV charging impacts  
11 across multiple jurisdictions. To put the factor of 2.7 in context, if 2.7 PIVs were charging  
12 on a given residential transformer, that would (in the worst case of 7KW level 2 chargers)  
13 add 18.9KW of load, potentially with a high degree of coincidence (i.e. after work). This  
14 would be a significant addition to a typical 25-32KVA transformer shared by multiple  
15 homes, and which is already supporting a baseline load. I offer this rough analogy as  
16 confirming context for the merit of the 2.7 factor used in my analysis, and substantiation  
17 that if anything it is conservative (i.e. systemic upgrades may be required well before the  
18 2.7 factor is reached market-wide).

19 **Q14: (Issue 10, Page 31, Line 10) While Hausman agrees that EE programs reducing**  
20 **consumption affects the per-unit allocation of embedded fixed costs, resulting in**  
21 **higher rates for all customers, he believes that the opposite does not necessarily hold**  
22 **true. Do you agree with this logic?**

23 **A14:** Definitely not. This section in Witness Hausman’s testimony appears to confirm the basic  
24 dynamic noted in my explanation of the dilution effect above: that the per-unit cost (i.e.  
25 \$/kwhr) that results from utility distribution requirement depends on kwhr-volume – it is  
26 arithmetic that when allocating that embedded-cost revenue requirement across volume, if  
27 the denominator goes down, the resulting unit-cost value will go up (as seen in EE  
28 program). The reverse is also undeniably true, when the denominator goes up, the unit-  
29 cost goes down - as assumed in my analysis for PIVs. His argument that this dynamic

1 applies for EE but not PIV because additional investment might be required is addressed  
2 by the fact that I project potential grid reinforcement, and include that as a potential cost in  
3 the SCT.

4 **Q15: (Issue 11, Page 32, Line 2) Do you find that Hausman’s statement, that “There are**  
5 **limits to the capacity of the company’s distribution assets; utilities such as ACE**  
6 **ultimately must invest in additional infrastructure to accommodate increases in load”**  
7 **to be correct?**

8 **A15:** Not at stated. I agree the statement true as a generalization but with an important  
9 clarification: whether investment is needed with increased load depends on *when* that load  
10 happens. If it is at an off-peak time, so that peak load (i.e. MWs) is not increased but  
11 overall utilization goes up, additional investment may not be required. The Company’s  
12 proposed residential off-peak charging program is intended to create exactly this outcome.  
13 I therefore disagree with Hausman’s statement that “... ACE ultimately *must* invest in  
14 additional infrastructure to accommodate increases in load.” (emphasis added). Instead, I  
15 believe the more correct statement is that “utilities *may* need to invest in additional  
16 infrastructure if new loads increase existing peak usage”. This is a particularly important  
17 distinction, because the residential off-peak programs are intended to mitigate the impact  
18 of PIV charging on the distribution system, specifically to avoid the additional investments  
19 that Witness Hausman envisions, and my analysis suggests that there is merit in supporting  
20 those programs for that reason. If Witness Hausman is concerned about potential grid  
21 reinforcement costs that might be induced by PIV charging, as his assertion suggests, it  
22 would follow that the managed charging programs proposed by the Company would be  
23 seen as a pre-emptive effort to avoid such ratepayer costs.

24 **Q16: (Issue 12, Page 33, Line 5) Hausman asserts that benefits have not been attributed**  
25 **fairly in the offer-specific tests, and he states that “ ... the benefit of these PIVs...**  
26 **cannot be attributed to the Company’s offerings”. Was this consideration addressed**  
27 **in your analysis, and if so how?**

28 **A16:** Yes, ensuring the fair attribution of benefits was a detailed part of the offer-specific merit  
29 test design. First, as noted above some of the utility’s programs – such as the off-peak

1 residential charging program – are not intended to induce PVI adoption, they are intended  
2 to mitigate the grid impact of PIV charging. Judging a program that is not intended to  
3 induce adoption based on whether it increases adoption is unreasonable. Second, and more  
4 importantly, within the offer-specific tests dilution is always considered based on the  
5 impact directly induced by that offer (not the number of PIVs on the road overall). For  
6 example, in the residential off-peak program I don't claim dilution benefits at all because,  
7 as noted above, that offer is not intended to increase adoption and therefore doesn't  
8 contribute to dilution. So my analysis did not inappropriately claim dilution in that case.  
9 For the public charging offers, which do have some impact on adoption, I only counted the  
10 fraction of the overall dilution benefit associated with the volume delivered by the charging  
11 induced by the Company's offers. By considering only the volume directly induced by the  
12 utility program, I believe a fair fraction of the dilution affect has been represented.  
13 Nowhere in my analysis did I attempt to attribute all of the dilution effect exclusively to  
14 ACE's proposed programs.

15 **Q17: (Issue 13) In several sections of his testimony, Witness Hausman raises concerns about**  
16 **free-ridership and related issues, and asserts that your analysis does not account for**  
17 **it properly. Did your analysis account for free-ridership?**

18 **A17:** Yes, although perhaps not in the way Witness Hausman might have expected. There is no  
19 "free-ridership" discount in my analysis, as might be evident in a traditional EE benefit/cost  
20 calculation. But that doesn't mean it wasn't considered, and my analysis reflects the fact  
21 that free-ridership is a more complex issue for PIV programs than with simple EE  
22 measures. My model accounts for free-ridership in a way that is appropriate for each offer-  
23 specific merit test. In response to several of the issues raised by Witness Hausman:

- 24 • General program participation: Witness Hausman asserts (page 23, line 12) that  
25 since neither I nor the Company demonstrated a link between the PIV programs  
26 and adoption, "... most of them (program participants) would be "free-riders".  
27 In a separate section (Page 34, line 1): Witness Hausman again makes the point  
28 that "If many of the customers who would participate in ACE's offerings and  
29 receive rebates and other incentives would have purchased and driven electric  
30 vehicles even in the absence of these incentives, then the benefit of these



vehicles and miles cannot reasonably be attributed to ACE’s program.” First, as noted several times above, not all the utility Offers are intended to induce adoption, they are focused on grid impact mitigation. So inferring a high level of free-ridership because they don’t induce adoption is unreasonable. See more detail below for how free-ridership is handled for the off-peak charging programs. Secondly, for the offers that do induce adoption, such as the multi-family program (Offer 4) or the public charging programs (Offers 7, 8, 9), the “participant” in this case is not a PIV driver (as implied by Witness Hausman) but an infrastructure developer, i.e. the landlord or site host that (even without a utility incentive) would have built a charger for the apartment complex, or the competitive provider that would have built a public charging station where needed (to fill a charging availability gap). In those cases, free-ridership must be focused on the program participant (e.g. landlord), not the PIV drivers as expected by Witness Hausman. Focusing on whether drivers would have adopted vehicles with or without the Company’s programs is not relevant when the focus of the programs is owner/operator involvement in infrastructure development. Focusing on infrastructure owner/operators engagement as the proper metric for free-ridership in this case, the nature of the offers and their design parameters already minimize (if not eliminate) free-ridership: development of charging in the multi-family segment is virtually non-existent in New Jersey, for the public charging offers the state is clearly far behind its statutory goals based exclusively on private investment (e.g. the DEP currently recognizes only six compliant corridor locations in place compared with the 75 – 118 locations required), and based on the Board’s recent PIV ecosystem order, utility ownership/operation of public charging only take place under “last resort” conditions, which by definition, imply zero free-ridership. Contrary to Witness Hausman’s assertion, free-ridership was a fundamental consideration in the design of ACE’s PIV programs, and the BCA analysis of those programs.

- Free-ridership in the off-peak charging programs (Line 28, Line 8): Witness Hausman asserts that “... it seems that the Company is assuming that that *no* charging would be occurring off peak in the absence of its programs...”. But

1 that is not the case. The off-peak BCA is built-up based on real-world statistics  
2 about how PIV drivers *really charge*, and accounts for charging that happens  
3 off-peak in an environment where incentives do not exist (i.e. the natural  
4 charging case). The calculated “avoided peak” is based on real, measured,  
5 charging behavior. In that case, it doesn’t make sense to assume that an actual  
6 kwhr during peak time could have actually happened at a different time (off  
7 peak) then it really did. The analysis is already accounting for only those  
8 customers that would, in fact, have charged at peak time, and further adjustment  
9 to account for potential free-ridership is therefore not necessary.

- 10 • Whether environmental benefits are induced (Page 35, line 8): While Witness  
11 Hausman states that “I do not doubt that there are significant and important  
12 health and greenhouse gas benefits associated with increased PIV adoption in  
13 general...”, he again brings up the issue of free-ridership and asserts that “...  
14 the environmental benefits projected for the Company’s proposed offerings by  
15 Mr. Warner are predicated on his assumption regarding the impact of these  
16 proposed offerings on vehicle ownership and miles driven, and crucially must  
17 take the question of free ridership into account. Because Mr. Warner did not  
18 consider this factor in his analysis, his results do not provide a meaningful  
19 projection of the environmental benefits specifically attributable to the  
20 Company’s proposed offerings.” As addressed above, this conclusion is based  
21 on the false assertion that free-ridership was not accounted for in my analysis,  
22 when in fact it was address in a robust and conservative way.

23 **Q18: (Issue 18, Page 36, Line 5) In response to a question about how I accounted for the**  
24 **Company’s charging revenue in the analysis, Hausman asserts that “... it is hard to**  
25 **see how it accrues as a “benefit” to anyone other than ACE’s shareholders”. Why**  
26 **were public charging revenues considered to a benefit in your analysis?**

27 **A18:** I acknowledge that these revenues could have been accounted for in a variety of ways. But  
28 since these revenues impact cost recovery and ratepayer impact, I believe they must be  
29 included in the analysis. The Company has represented that it intends to use the revenues  
30 from those public chargers to reduce the recovery requirements passed on to ratepayers. I

1           therefore accounted for them as a benefit since a) that was the most transparent way to  
2           “book” those revenues, and b) since they offset ratepayer recovery, I believe it is fair to  
3           account for them as a benefit to the ratepayer. As noted, it could be “booked” in other  
4           ways, for example as an offset on utility program costs, but I believe that would be  
5           arithmetically equivalent to accounting for them as a benefit.

6   **Q19: Does this conclude your rebuttal testimony at this time?**

7   **A19:** Yes, it does.

# Schedule (MW-R)-1

## CLIMATE CHANGE ATTITUDES IN NEW JERSEY



***A Collaboration: Eagleton Center for Public Interest Polling/Rutgers-  
Eagleton Poll and New Jersey Climate Change Alliance***

***Ashley Koning, PhD, Assistant Research Professor and Director  
Cliff Zukin, PhD, Senior Survey Advisor  
William Young, MA, Research Associate  
Kyle Morgan, MA, Research Assistant***

**April 2019**



## EAGLETON INSTITUTE OF POLITICS — EAGLETON CENTER FOR PUBLIC INTEREST POLLING —

*The Eagleton Center for Public Interest Polling (ECPIP), home of the Rutgers-Eagleton Poll, was established in 1971. Now celebrating its 48<sup>th</sup> anniversary and over 200 public opinion polls on the state of New Jersey, ECPIP is the oldest and one of the most respected university-based state survey research centers in the United States.*

*Our mission is to provide scientifically sound, non-partisan information about public opinion. ECPIP conducts research for all levels of government and nonprofit organizations with a public interest mission, as well as college and university-based researchers and staff. ECPIP makes it a priority to design opportunities for undergraduate and graduate students to learn how to read, analyze, design, and administer polls. We pride ourselves on integrity, quality, and objectivity.*

*To read more about ECPIP and view all of our press releases and published research, please visit our website at [eagletonpoll.rutgers.edu](http://eagletonpoll.rutgers.edu).*



***The New Jersey Climate Change Alliance (NJCCA)*** is a collective of organizations and individuals that share the goal of advancing science-informed climate change strategies and policy at the state and local levels in New Jersey, both regarding adapting to changing climate conditions and reducing the emissions that cause climate change. Alliance efforts focus on short and long-term cost-effective climate change strategies and policies that promote economic growth, equity, improved health outcomes, natural solutions, and sustainable communities.

The Alliance works towards this goal through: leading collaborative demonstration projects; assessing and presenting evidence-based state and local policy options; conducting outreach and education to decision-makers, practitioners and the general public; linking natural and social scientists to policy-makers and practitioners to inform policy and practice; and developing tools and guidance to inform planning and decision-making in the public, private, and non-governmental sectors.

The Alliance was formed in 2011 originally as the New Jersey Climate Adaptation Alliance; in December 2018, it modified its name to better reflect the breadth of its work. The Alliance is facilitated by Rutgers University through the Rutgers Climate Institute and the Bloustein School of Planning and Public Policy.

## Concern About Climate Change

Two-thirds of New Jerseyans are either “very” (37 percent) or “somewhat” (30 percent) concerned about the effects of climate change on their life, their family members, or the people around them. Fifteen percent are “not very” concerned, and 18 percent are “not concerned at all.”

Some groups are more concerned than others. Women (73 percent), non-white residents (73 percent), and those with higher levels of education (75 percent) are all more likely than their counterparts to be concerned about the impact of climate change.

Climate change concern is also starkly divided along partisan lines. Most Democrats have some level of worry, with a slight majority expressing the highest concern (53 percent “very,” 28 percent “somewhat”). A slight majority of Republicans, on the other hand, feel just the opposite: 20 percent are “not very” concerned, and 37 percent are “not concerned at all.” But four in ten Republicans do express some level of worry (12 percent “very,” 31 percent “somewhat”). Independents are somewhere in the middle, with more than two-thirds saying they are concerned at some level (37 percent “very,” 32 percent “somewhat”) and the remainder split evenly between “not very” concerned and “not concerned at all.”

## Knowledge About Climate Change

New Jerseyans were asked how much they feel they know about climate change’s causes, its impact on the environment, how it might affect them in the future, and actions they might take to prepare for it. The public has varying levels of knowledge about these major aspects of climate change and divides into three roughly equal tiers of felt-knowledge. Almost four in ten New Jerseyans say they know “a lot” about the causes (37 percent) and the impact on the environment (38 percent); a third (32 percent) say the same about climate change’s effect on their lives in the future, and one in five (22 percent) say the same about how to prepare. About three in ten claim to know “some” about each of these aspects. The remainder of the population – about three in ten – say they know only a “little” or “nothing at all.” How to prepare is the only exception: just over four in ten residents say they know little (23 percent) or nothing at all (19 percent) about this.

Some demographic patterns emerge in terms of who knows how much. Socioeconomic status has a large impact on climate change knowledge: those in higher income brackets and those with higher levels education are more likely than their counterparts to say they know “a lot” or “some” about the causes of climate change, how it can affect the future, its impact, and how to prepare. Purported knowledge also rises with concern – the more concerned one is about



climate change, the more one typically claims to know “a lot” or “some” about each of these topic areas.

Older adults – those 65 or older – are the least likely of any age group to say they have a “lot” or “some” knowledge about what causes climate change, its future effects, its environmental impact, and how to prepare.

Partisans of all stripes are somewhat equally likely to say they know “a lot” or “some” about what they can do to prepare for climate change, but when it comes to how climate change affects one’s future or the environment, Democrats are more likely than independents and Republicans to claim they have at least “some” knowledge. Democrats are also more likely than their counterparts to say they know “a lot” about the causes of climate change.

### **How New Jerseyans See or Hear Information About Climate Change**

Knowledge is partly a function of information, and it seems clear that the information environment about climate change is neither a rich nor reinforcing one. The mass media – TV, radio and newspapers – are the dominant source of information about climate change for New Jerseyans. Just over half (53 percent) of the public reports getting information about climate change from the media “frequently,” and another 27 percent at least “occasionally.” There is a large drop from this to social media platforms like Twitter and Facebook: three in ten (29 percent) say they get information “frequently” from social media sources, and one in five (20 percent) say they do so “occasionally.”

Personal interactions are not a main source of information about climate change. Eighteen percent say they “frequently” get information from other people—their friends, families or work colleagues; another 30 percent say “occasionally.”

Governmental and community sources fare even worse: just one in ten say they “frequently” get information from either local community organizations or state government, and just over one in five say they “occasionally” do. Just over a third (35 percent) say they “never” get information from the government; four in ten (41 percent) say the same about local organizations.

The frequency with which individuals obtain information about climate change from these sources varies by some key factors. Media consumption increases with age and income. Social media platforms are used more as an information source by younger residents and more educated residents. Interpersonal communication about climate change is more prevalent among Democrats and those who are more highly educated.

Across the board, individuals of all kinds “rarely” or “never obtain climate change information through their state government or local organizations. Democrats are the only exception when it comes to community organizations, being more likely than any other group to get information from this type of source.

## **Public Policy Preferences and Support for Governmental Actions**

In general, New Jerseyans are supportive of government doing more, but not at the expense of paying more. This sentiment is reflected in a number of questions asked about public policy preferences and actions that should be taken related to causes and consequences of climate change.

### *Greenhouse Gas Regulation*

There is slightly more support for the state government to combat climate change by offering incentives than by strict regulation. When New Jerseyans are asked their preference between whether the government should impose limits on sources of greenhouse gases or whether they should try to reduce greenhouse gases voluntarily by offering incentives to those who reduce emissions, residents favor the latter 45 percent to 27 percent; another 20 percent say the government should do neither or both of these options, and 8 percent are unsure. Opinions change little when the question wording elaborates on who would be at the receiving end – either cars, trucks, and industries when imposing limits (30 percent prefer this option) or residents, businesses, and industries when asking to voluntarily reduce emissions (44 percent prefer this option).

### *Rebuilding in and Relocation of Flood-Prone Communities*

The cross-currents of public opinion can be seen in responses to what the government should do about rebuilding and relocating in areas of the state that are prone to flooding, severe weather, and damage by storms. New Jerseyans were asked whether the state government should help residents in these areas or if they should be on their own in rebuilding. Generally, residents are supportive of helping homeowners in this situation, but there is also a class and income component to their views.

Within the half of the sample asked about residents in “upper income areas” rebuilding or relocating, 49 percent support government recovery assistance compared to 33 percent who feel that homeowners should pay for it on their own. Support was markedly higher among the other half of the sample asked about residents living in “lower and middle-income areas” – 63 percent in favor of government assistance versus 17 percent who think residents should be responsible for their own costs. In each half of the sample, another 13 percent volunteered that

it should be a combination of both the government and homeowners paying for rebuilding or relocation.

A majority of every demographic group – by double digits – is more likely to support government assistance for residents living in “lower or middle-income” areas than they are residents in “upper income” areas. The only exception is Republicans: under half support government assistance in either case.

When then asked whether the government, in general, should or should not have the power to prohibit homeowners from rebuilding in flood-prone areas, responses are somewhat split – 50 percent to 43 percent; another 7 percent are unsure. Opinions are split across every demographic.

New Jerseyans appear to be unwilling to pay extra to make infrastructure more weather resistant at this point in time. Asked to choose between “funding roads, bridges, and government buildings at the current cost or paying a little more in taxes to make them better able to withstand severe weather events,” 40 percent say they are willing to pay more, while 54 percent are not; 7 percent offer no opinion. Republicans (68 percent), men (58 percent), and those in households making over \$150,000 annually (61 percent) are especially likely to want to keep costs the same and not pay anything more. The only majorities who are willing to pay more are Democrats (54 percent) and those who are “very concerned” about climate change (53 percent).

### *Local government action*

There is support for more local government activity in the climate change area. By a margin of 57 to 6 percent, more feel their mayor and local government should be doing more rather than less to reduce the effects of climate change. A quarter (24 percent) say they are doing enough already, and the remaining 12 percent offer no opinion.

Democrats (70 percent), women (64 percent), non-white residents (67 percent), younger residents (61 percent), those in the lowest income bracket (69 percent), and those with higher levels of education (62 percent) especially feel their local government should be doing more.

### **Paying for Climate Change**

Citizens are hesitant to reach into their own pockets to pay for remedies. When asked who should pay whatever the added costs are to make New Jersey more resilient to the impact of climate change, 62 percent want the fuel producers and users responsible for greenhouse gas emissions to pay a “major share” of the cost; another 22 percent say they should pay a “minor

share.” Forty-three percent believe state government should pay a “major share” from the taxes it collects; another 35 percent feel the state should pay a “minor share.” Only 6 percent feel residents should fund a “major” part of addressing climate change through a charge on their utility bills; 45 percent each say residents should pay a “minor share” or “no share at all.”

Majorities across the board support fuel producers paying a “major share” of what is needed to help combat climate change – Republicans are the only exception, at 48 percent. Democrats (53 percent), women (48 percent), younger residents (48 percent), and those who are more educated (50 percent) are especially likely to feel that the state government should pay a “major share.”

Additional evidence of the public’s resistance to pay directly for energy conservation comes from a set of questions asked about affordable and low-income housing. There is consensus that low-income rental housing should be required to meet energy efficiency building standards (79 percent “strongly” or “somewhat” support, 16 percent “strongly” or “somewhat” oppose). A similar number (50 percent “strongly,” 30 percent “somewhat”) say that utility companies should be required to provide financial incentives to help low-income customers cover the cost of energy-saving improvements to their home. But a bare majority (28 percent “strongly,” 27 percent “somewhat”) say they would be willing to pay an additional 50 cents per month to help low income households make their homes more energy efficient. Over four in ten oppose this (11 percent “somewhat,” 32 percent “strongly”) – a charge that would amount to just \$6 a year for this benefit.

There is widespread support for the first two proposals, though to varying degrees. Democrats and non-white residents are especially enthusiastic about meeting standards, providing financial incentives, and paying an additional 50 cent fee. Republicans, residents over 50 years old, and those in the highest income bracket are less likely to show support for these initiatives.

## **Support for Electric Vehicles**

Half of New Jerseyans say they expect to buy a new car sometime in the next five years. Among this group, 38 percent say they would seriously consider buying an electric car next time; 53 percent would not, 2 percent already have one, and 8 percent are unsure.

Republicans, men, those in the highest income bracket, and those who have done graduate work are more likely than their counterparts to say they may buy a car in the near future. When it comes to future car shoppers, Democrats, men, those under 50 years old, and those with at least some college are especially likely to say they would seriously consider buying an electric

vehicle. Residents who are concerned about climate change are especially likely to say they would seriously consider making the switch to electric.

Residents not willing to consider or ambivalent about buying an electric vehicle were asked to state whether various items were a “major” or “minor” reason for their hesitation to purchase. Hesitation mainly revolved around charging capabilities. Fifty-six percent say running out of power on the road is a “major” concern, while another 17 percent say it is a “minor” one. Forty-four percent say that having a place to charge the car at home is a “major” reason for not considering an electric vehicle as their next car; another 17 percent say this a “minor” reason.

About four in ten (39 percent) say car performance is a “major” reason for their hesitation; another one in five (18 percent) say it is a “minor” reason.

New Jerseyans are least likely to feel that cost is a barrier – 35 percent say this is a “major” reason, and another 15 percent say it is a “minor” one. Cost is a major factor, however, for those in households making less than \$100,000 annually compared to their more affluent counterparts.

### Questions and Tables

The questions covered in this report are listed below. Column percentages may not add to 100% due to rounding. Respondents are New Jersey adults; all percentages are of weighted results. Use extreme caution when interpreting groups smaller than N=100.

#### Q. Do you think you might buy a new car in the next five years or so, or not?

	ALL	Concern About Climate Change			
		Very	Somewhat	Not very	Not at all
Yes	50%	52%	55%	46%	41%
No	47%	45%	42%	51%	55%
Don't know (vol)	3%	2%	4%	3%	4%
Unwght N=	1006	391	295	147	169

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Yes	47%	47%	63%	54%	46%	51%	49%	49%	52%	58%	38%	40%	52%	55%	65%
No	50%	50%	35%	43%	50%	46%	48%	46%	46%	40%	58%	56%	45%	41%	34%
Don't Know (vol)	3%	4%	2%	3%	3%	3%	3%	6%	2%	2%	4%	3%	4%	3%	1%
Unwght N=	354	427	201	485	521	642	332	237	210	333	221	194	279	184	194

	Education				Region				
	High school or less	Some college	College grad	Graduate work	Urban	Suburb	Exurban	Phil/South	Shore
Yes	46%	52%	41%	62%	41%	50%	52%	58%	48%
No	51%	46%	55%	32%	54%	47%	45%	38%	50%
Don't Know (vol)	4%	1%	4%	6%	5%	3%	3%	4%	2%
Unwght N=	188	281	300	230	147	345	159	177	178

**Q. Thinking about the next car you might buy, do you think you WOULD or would NOT seriously consider buying an electric car – one that runs on electricity rather than gas – or do you already have one?**

	ALL	Concern About Climate Change	
		Very/ Somewhat	Not very/ at all
Would	38%	44%	24%
Would not	53%	45%	70%
Already have one	2%	2%	0%
Don't know (vol)	8%	9%	5%
Unwght N=	540	384	155

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Would	51%	40%	19%	43%	34%	35%	42%	44%	41%	34%	33%	36%	37%	43%	36%
Would not	40%	50%	73%	50%	55%	54%	50%	49%	48%	56%	57%	51%	54%	47%	57%
Already have one	1%	2%	1%	1%	2%	2%	1%	2%	0%	2%	1%	3%	0%	1%	2%
Don't know (vol)	7%	7%	8%	7%	9%	8%	7%	4%	10%	8%	9%	9%	8%	8%	5%
Unwght N=	181	222	128	282	258	355	171	126	113	196	104	87	147	108	128

	Education			
	High school or less	Some college	College grad	Graduate work
Would	20%	44%	47%	43%
Would not	68%	48%	47%	46%
Already have one	1%	2%	1%	2%
Don't know (vol)	11%	6%	5%	9%
Unwght N=	94	148	137	156

**Q. Please tell me whether each of the following is a major reason, minor reason, or not a reason at all why you would NOT seriously consider buying an electric car. First [INSERT ITEM] – major reason, minor reason, or not a reason at all why you wouldn't consider an electric car?**

	<b>Can't afford one</b>	<b>Don't have a place to charge at home</b>	<b>Worried about running out of power on road</b>	<b>Don't think it would perform as well as a traditional car</b>
Major reason	35%	44%	56%	39%
Minor reason	15%	17%	17%	18%
Not a reason at all	45%	35%	23%	34%
Don't know (vol)	5%	4%	3%	9%
Unwght N=	310	310	310	310

#### **Can't afford one**

	Party ID			Gender		Race		Age		Income		Education		Concern About Climate Change	
	Dem	Ind	Rep	Male	Female	White	Non- wht.	Under 50	50+	<\$100K	\$100K+	Some college or less	College or more	Very/ Somewhat	Not very/ at all
Major reason	31%	36%	36%	32%	37%	34%	36%	38%	32%	38%	28%	36%	33%	36%	33%
Minor reason	13%	19%	13%	18%	13%	17%	14%	17%	14%	16%	14%	13%	19%	15%	15%
Not a reason at all	52%	41%	45%	48%	42%	44%	47%	40%	50%	39%	54%	45%	45%	44%	48%
Don't know (vol)	3%	5%	6%	1%	8%	6%	3%	5%	4%	6%	4%	6%	3%	5%	3%
Unwght N=	87	125	94	151	159	202	99	128	182	137	131	153	155	197	112



**Don't have a place to charge at home**

	Party ID			Gender		Race		Age		Income		Education		Concern About Climate Change	
	Dem	Ind	Rep	Male	Female	White	Non- wht.	Under 50	50+	<\$100K	\$100K+	Some college or less	College or more	Very/ Somewhat	Not very/ at all
Major reason	44%	48%	40%	39%	48%	41%	47%	44%	44%	46%	42%	43%	44%	48%	37%
Minor reason	17%	21%	14%	21%	14%	20%	14%	21%	14%	16%	18%	14%	23%	17%	17%
Not a reason at all	38%	29%	40%	38%	32%	35%	37%	33%	37%	34%	38%	37%	33%	30%	44%
Don't know (vol)	1%	2%	7%	2%	5%	5%	2%	2%	4%	4%	3%	5%	1%	5%	2%
Unwght N=	87	125	94	151	159	202	99	128	182	137	131	153	155	197	112

**Worried about running out of power on the road**

	Party ID			Gender		Race		Age		Income		Education		Concern About Climate Change	
	Dem	Ind	Rep	Male	Female	White	Non- wht.	Under 50	50+	<\$100K	\$100K+	Some college or less	College or more	Very/ Somewhat	Not very/ at all
Major reason	47%	59%	58%	53%	59%	57%	52%	49%	62%	52%	58%	56%	55%	54%	61%
Minor reason	25%	16%	13%	24%	11%	17%	19%	26%	10%	19%	17%	16%	20%	19%	13%
Not a reason at all	28%	21%	24%	22%	25%	22%	28%	23%	24%	25%	23%	24%	23%	23%	25%
Don't know (vol)	1%	4%	5%	1%	6%	5%	2%	2%	4%	4%	3%	5%	1%	5%	0%
Unwght N=	87	125	94	151	159	202	99	128	182	137	131	153	155	197	112

**Don't think it would perform as well as a traditional car**

	Party ID			Gender		Race		Age		Income		Education		Concern About Climate Change	
	Dem	Ind	Rep	Male	Female	White	Non- wht.	50	50+	<\$100K	\$100K+	Some college or less	College or more	Very/ Somewhat	Not very/ at all
Major reason	39%	36%	40%	38%	39%	41%	36%	33%	43%	40%	36%	41%	35%	37%	42%
Minor reason	18%	20%	17%	19%	17%	17%	20%	24%	14%	19%	18%	17%	20%	19%	15%
Not a reason at all	37%	38%	28%	38%	31%	30%	39%	39%	31%	33%	37%	31%	39%	34%	35%
Don't know (vol)	6%	5%	15%	5%	13%	12%	5%	5%	13%	8%	9%	11%	5%	10%	8%
Unwght N=	87	125	94	151	159	202	99	128	182	137	131	153	155	197	112

**Q. How concerned are you about the effects of climate change on your life, or family members, and the people around you? Are you:**

	ALL
Very concerned	37%
Somewhat concerned	30%
Not very concerned	15%
Not at all concerned	18%
Don't know (vol)	0%
Unwght N=	1008

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Very concerned	53%	37%	12%	33%	41%	33%	43%	37%	37%	39%	35%	48%	36%	38%	33%
Somewhat concerned	28%	32%	31%	28%	32%	31%	30%	34%	32%	27%	29%	27%	32%	30%	34%
Not very concerned	11%	15%	20%	16%	13%	15%	13%	16%	14%	15%	13%	10%	15%	15%	14%
Not at all concerned	7%	16%	37%	22%	14%	21%	14%	13%	17%	19%	23%	16%	16%	17%	20%
Don't know (vol)	1%	0%	0%	1%	0%	0%	0%	1%	0%	0%	0%	0%	0%	0%	0%
Unwght N=	355	428	201	486	522	643	333	239	210	333	221	194	279	184	195

	Education				Region				
	High school or less	Some college	College grad	Graduate work	Urban	Suburb	Exurban	Phil/South	Shore
Very concerned	27%	37%	41%	50%	39%	41%	39%	33%	29%
Somewhat concerned	33%	31%	29%	25%	37%	29%	24%	33%	31%
Not very concerned	18%	13%	14%	11%	13%	15%	13%	15%	17%
Not at all concerned	21%	18%	15%	13%	11%	16%	24%	18%	23%
Don't know (vol)	0%	1%	1%	0%	0%	0%	0%	1%	0%
Unwght N=	189	282	300	230	147	345	159	177	180

**Q. Please tell me if you think you know a lot, some, a little, or nothing at all about each of the following. First:**

	Causes of climate change	How climate change impacts the environment	How climate change might affect your life in future	What you can do to better prepare for changes climate change might bring
A lot	37%	38%	32%	22%
Some	31%	31%	32%	32%
A little	18%	18%	18%	23%
Nothing at all	12%	12%	14%	19%
Don't know (vol)	2%	2%	4%	4%
Unwght N=	1002	1001	1005	1002

**Causes of climate change**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wht.	18-34	35-49	50-64	65+	<\$50K	<\$100K	<\$150K	\$150K+
A lot	42%	35%	33%	43%	31%	38%	35%	37%	38%	41%	31%	37%	31%	38%	46%
Some	26%	33%	36%	31%	32%	34%	29%	34%	31%	32%	29%	25%	37%	38%	31%
A little	21%	19%	12%	18%	18%	17%	20%	21%	18%	15%	19%	18%	18%	22%	13%
Nothing at all	10%	11%	15%	8%	15%	9%	15%	8%	12%	12%	15%	19%	14%	1%	8%
Don't know (vol)	1%	2%	4%	1%	3%	2%	2%	1%	1%	1%	7%	2%	1%	1%	2%
Unwght N=	353	425	201	483	519	640	332	238	208	332	219	193	277	184	195

	Concern About Climate Change				Education				Region				
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban	Phil/ South	Shore
A lot	52%	26%	26%	31%	26%	36%	41%	51%	43%	36%	44%	33%	33%
Some	28%	39%	28%	29%	29%	32%	35%	29%	23%	35%	31%	30%	32%
A little	13%	25%	23%	12%	19%	20%	17%	15%	18%	18%	11%	23%	19%
Nothing at all	5%	8%	21%	23%	21%	11%	6%	3%	13%	9%	13%	12%	14%
Don't know (vol)	1%	2%	2%	5%	5%	0%	1%	2%	3%	2%	1%	2%	3%
Unwght N=	391	295	144	168	187	282	297	230	146	344	157	177	178

**How climate change impacts the environment around you**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
A lot	40%	41%	30%	40%	36%	39%	35%	46%	36%	36%	32%	37%	36%	33%	45%
Some	32%	29%	31%	31%	31%	32%	31%	28%	32%	34%	29%	20%	30%	43%	34%
A little	19%	16%	20%	18%	18%	18%	19%	16%	19%	18%	19%	23%	17%	20%	12%
Nothing at all	8%	12%	18%	10%	13%	10%	13%	9%	12%	11%	16%	16%	15%	3%	7%
Don't know (vol)	0%	2%	2%	2%	2%	2%	1%	1%	0%	1%	5%	3%	1%	0%	1%
Unwght N=	354	426	198	483	518	638	333	239	209	332	216	194	276	184	194

	Concern About Climate Change				Education				Region				
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban	Phil/ South	Shore
A lot	54%	31%	22%	29%	30%	39%	37%	48%	41%	35%	41%	39%	38%
Some	29%	38%	30%	23%	23%	32%	38%	33%	29%	35%	32%	26%	29%
A little	12%	23%	26%	15%	22%	18%	16%	15%	19%	17%	11%	24%	18%
Nothing at all	5%	5%	22%	30%	22%	10%	7%	3%	9%	12%	14%	12%	11%
Don't know (vol)	0%	3%	0%	3%	3%	1%	2%	1%	2%	1%	1%	0%	3%
Unwght N=	391	295	144	167	188	280	297	230	146	344	157	177	177

**How climate change might affect your life in the future**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
A lot	41%	30%	25%	36%	29%	32%	31%	39%	30%	33%	25%	32%	29%	33%	35%
Some	29%	33%	34%	29%	34%	35%	30%	32%	35%	31%	31%	28%	33%	36%	36%
A little	18%	19%	17%	17%	19%	18%	17%	17%	20%	19%	16%	16%	22%	22%	17%
Nothing at all	11%	13%	21%	14%	14%	11%	18%	9%	12%	15%	21%	18%	15%	4%	10%
Don't know (vol)	1%	5%	3%	3%	4%	4%	4%	4%	3%	2%	7%	6%	2%	5%	2%
Unwght N=	355	426	201	484	521	642	333	239	209	332	220	194	278	184	195

	Concern About Climate Change				Education				Region					
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban	Phil/ South	Shore	
A lot	49%	21%	21%	25%	24%	31%	36%	46%	33%	31%	41%	30%	30%	
Some	32%	44%	24%	20%	26%	36%	36%	30%	31%	34%	29%	28%	34%	
A little	11%	25%	31%	12%	20%	20%	16%	16%	15%	18%	13%	25%	19%	
Nothing at all	6%	8%	19%	37%	24%	12%	9%	6%	14%	14%	14%	14%	12%	
Don't know (vol)	3%	3%	5%	6%	7%	2%	3%	2%	6%	2%	3%	3%	5%	
Unwght N=	391	295	147	168	188	282	299	230	146	345	158	177	179	

**What you can do to better prepare for changes that climate change might bring**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
A lot	23%	22%	24%	27%	18%	23%	22%	24%	29%	20%	17%	20%	19%	26%	29%
Some	32%	31%	32%	30%	33%	35%	28%	28%	30%	38%	30%	26%	36%	36%	34%
A little	26%	23%	17%	22%	24%	22%	25%	28%	22%	23%	18%	21%	24%	24%	23%
Nothing at all	17%	18%	23%	17%	21%	16%	22%	15%	18%	17%	27%	29%	18%	9%	12%
Don't know (vol)	2%	5%	4%	4%	4%	4%	4%	5%	2%	3%	6%	5%	3%	5%	2%
Unwght N=	354	425	200	482	520	640	332	239	209	330	219	194	276	183	195

	Concern About Climate Change					Education			Region				
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban	Phil/ South	Shore
A lot	30%	16%	14%	24%	16%	23%	26%	30%	25%	21%	28%	23%	18%
Some	35%	40%	24%	18%	29%	33%	31%	35%	33%	37%	34%	17%	34%
A little	23%	25%	28%	13%	20%	22%	27%	23%	17%	23%	23%	29%	22%
Nothing at all	11%	12%	32%	37%	30%	17%	14%	11%	21%	16%	11%	26%	21%
Don't know (vol)	1%	6%	2%	8%	6%	4%	3%	2%	3%	3%	4%	5%	5%
Unwght N=	391	295	145	167	187	282	297	230	146	345	157	176	178

**Q. Now I'd like you to tell me how often you see or hear information about climate change through each of the following sources. Do you frequently, occasionally, rarely, or never see or hear information about climate change through [INSERT ITEM]?**

	News stories on radio, TV, or in newspapers	Info provided by state gov't	Info provided by local community organizations	Social media like Facebook and Twitter	Family, friends, neighbors, or coworkers
Frequently	53%	10%	10%	29%	18%
Occasionally	27%	23%	22%	20%	30%
Rarely	11%	30%	26%	13%	24%
Never	8%	35%	41%	37%	28%
Don't know (vol)	0%	1%	1%	2%	1%
Unwght N=	1004	1005	1005	1005	1005

**News stories on the radio, television, or in newspapers**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Frequently	56%	47%	62%	56%	51%	60%	46%	45%	44%	59%	66%	41%	54%	56%	62%
Occasionally	27%	30%	21%	24%	29%	26%	28%	25%	30%	27%	25%	32%	27%	28%	23%
Rarely	11%	13%	11%	12%	11%	9%	15%	17%	15%	8%	5%	16%	13%	13%	6%
Never	7%	10%	6%	8%	8%	5%	12%	12%	11%	6%	4%	11%	7%	3%	9%
Don't know (vol)	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Unwght N=	354	426	201	484	520	640	333	239	210	330	220	193	278	183	195



	Concern About Climate Change				Education				Region				
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban	Phil/South	Shore
Frequently	60%	51%	44%	52%	49%	52%	56%	62%	47%	58%	56%	47%	53%
Occasionally	24%	31%	26%	26%	28%	27%	28%	22%	28%	22%	27%	34%	27%
Rarely	9%	12%	16%	10%	12%	14%	10%	8%	14%	13%	8%	10%	10%
Never	7%	6%	13%	12%	11%	7%	6%	7%	9%	7%	8%	10%	10%
Don't know (vol)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	0%	0%	0%
Unwght N=	390	295	146	169	189	281	298	230	146	345	159	177	177

**Information provided by the state government**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wht.	18-34	35-49	50-64	65+	<\$50K	<\$100K	<\$150K	\$150K+
Frequently	10%	11%	9%	12%	8%	10%	10%	12%	11%	8%	10%	11%	7%	10%	9%
Occasionally	20%	25%	23%	20%	26%	24%	23%	22%	25%	23%	22%	19%	29%	24%	23%
Rarely	35%	28%	28%	33%	28%	33%	28%	31%	29%	32%	30%	31%	31%	30%	35%
Never	33%	35%	38%	33%	36%	33%	37%	35%	34%	35%	36%	38%	32%	35%	33%
Don't know (vol)	1%	1%	2%	1%	1%	1%	2%	0%	1%	2%	2%	1%	1%	2%	0%
Unwght N=	354	427	201	485	520	641	333	239	210	331	220	193	278	184	195

	Concern About Climate Change				Education				Region				
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban	Phil/South	Shore
Frequently	10%	11%	6%	13%	9%	13%	8%	9%	11%	10%	14%	9%	9%
Occasionally	27%	23%	21%	18%	20%	21%	28%	26%	20%	28%	22%	16%	24%
Rarely	32%	37%	24%	22%	28%	31%	33%	31%	31%	29%	31%	31%	32%
Never	30%	28%	49%	44%	40%	34%	30%	34%	38%	32%	31%	44%	34%
Don't know (vol)	1%	1%	1%	3%	2%	1%	1%	0%	0%	2%	2%	1%	1%
Unwght N=	391	295	146	169	189	282	298	230	146	345	159	177	178

**Information provided by local organizations in your community**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Frequently	11%	10%	7%	9%	11%	9%	10%	12%	7%	8%	12%	12%	8%	11%	8%
Occasionally	30%	19%	18%	22%	23%	23%	22%	16%	27%	25%	21%	19%	23%	29%	25%
Rarely	26%	28%	24%	27%	25%	29%	22%	32%	23%	27%	20%	25%	31%	24%	26%
Never	34%	42%	49%	41%	40%	38%	44%	38%	43%	38%	46%	43%	36%	35%	41%
Don't know (vol)	0%	2%	1%	1%	1%	1%	2%	2%	0%	1%	1%	1%	2%	1%	0%
Unwght N=	354	427	201	485	520	641	333	239	209	332	220	194	278	184	194

	Concern About Climate Change				Education				Region				Phil/ South	Shore
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban			
Frequently	14%	9%	4%	7%	9%	11%	10%	9%	10%	9%	15%	8%	8%	
Occasionally	29%	24%	11%	13%	20%	19%	23%	30%	19%	26%	21%	16%	25%	
Rarely	26%	26%	33%	20%	18%	29%	30%	29%	19%	27%	24%	30%	30%	
Never	30%	39%	50%	60%	52%	40%	35%	31%	51%	37%	39%	47%	35%	
Don't know (vol)	1%	2%	1%	0%	2%	1%	1%	0%	0%	2%	0%	0%	2%	
Unwght N=	391	294	146	170	189	282	300	230	147	344	159	177	178	

**Social media platforms like Facebook and Twitter**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Frequently	29%	32%	22%	34%	25%	29%	30%	39%	31%	30%	14%	25%	29%	35%	29%
Occasionally	22%	19%	19%	17%	23%	19%	22%	22%	23%	19%	15%	23%	20%	21%	24%
Rarely	12%	11%	18%	12%	13%	12%	13%	13%	15%	10%	13%	9%	16%	11%	12%
Never	36%	36%	37%	36%	37%	37%	34%	26%	30%	40%	52%	43%	33%	33%	35%
Don't know (vol)	1%	1%	4%	2%	2%	3%	1%	0%	1%	2%	6%	1%	2%	1%	1%
Unwght N=	354	428	200	485	520	641	333	239	209	332	220	194	278	184	194

	Concern About Climate Change				Education				Region					
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban	Phil/South	Shore	
Frequently	38%	25%	24%	23%	25%	27%	33%	33%	32%	28%	39%	22%	28%	
Occasionally	22%	22%	14%	17%	17%	20%	24%	20%	20%	21%	16%	22%	18%	
Rarely	9%	15%	18%	11%	12%	12%	12%	14%	12%	12%	8%	18%	12%	
Never	30%	35%	43%	48%	44%	39%	28%	32%	34%	37%	36%	36%	39%	
Don't know (vol)	2%	3%	1%	1%	3%	1%	3%	1%	2%	3%	1%	1%	2%	
Unwght N=	391	295	145	170	189	282	299	229	147	345	158	177	178	

**Family, friends, neighbors, or coworkers**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Frequently	20%	17%	16%	15%	21%	19%	17%	14%	23%	17%	18%	20%	18%	17%	16%
Occasionally	34%	28%	26%	30%	30%	29%	30%	32%	29%	27%	33%	23%	27%	40%	31%
Rarely	23%	24%	25%	23%	24%	25%	22%	27%	23%	26%	16%	22%	25%	24%	30%
Never	23%	30%	32%	32%	25%	26%	30%	27%	25%	29%	31%	35%	30%	17%	23%
Don't know (vol)	0%	0%	2%	0%	1%	0%	1%	0%	0%	0%	3%	1%	0%	2%	0%
Unwght N=	354	427	201	485	520	641	333	239	210	331	220	194	278	183	195

	Concern About Climate Change				Education				Region				Phil/ South	Shore
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban			
Frequently	29%	14%	9%	10%	13%	20%	19%	23%	16%	18%	22%	15%	20%	
Occasionally	36%	27%	25%	26%	27%	26%	32%	35%	26%	35%	26%	28%	27%	
Rarely	20%	29%	28%	19%	19%	26%	26%	24%	22%	23%	24%	27%	23%	
Never	15%	29%	38%	45%	41%	28%	21%	15%	35%	23%	28%	30%	29%	
Don't know (vol)	0%	1%	0%	1%	0%	0%	1%	2%	1%	1%	1%	0%	1%	
Unwght N=	391	295	145	170	189	282	298	230	147	345	159	176	178	

**[SPLIT SAMPLE – ½ VERSION A, ½ VERSION B]****[VERSION A]**

**Q. Combating climate change will require some decisions and choices by the New Jersey government. I'd like to ask you about *your* preferences. Which statement comes closer to what you think the government should do, even if neither is perfect:**

The government should impose limits on the sources of green-house gasses, such as limiting emissions from cars, trucks, and industries	30%
The government should try to reduce greenhouse gases voluntarily by offering incentives to those who reduce their emissions, such as residents, businesses and industries	44%
Both/neither (vol)	20%
Don't know (vol)	5%
Unwght N=	497

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Gov't should impose limits	40%	26%	21%	28%	32%	31%	30%	24%	36%	33%	26%	32%	29%	37%	29%
Gov't should reduce voluntarily	44%	45%	44%	42%	47%	43%	46%	50%	38%	47%	39%	42%	49%	37%	51%
Both/neither (vol)	11%	22%	31%	27%	15%	24%	16%	18%	25%	16%	25%	19%	15%	24%	18%
Don't know (vol)	4%	7%	4%	4%	6%	2%	9%	8%	0%	3%	10%	6%	6%	3%	2%
Unwght N=	173	213	99	239	258	333	152	112	88	181	113	102	135	88	96

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Gov't should impose limits	36%	18%	22%	35%
Gov't should reduce voluntarily	45%	44%	45%	43%
Both/neither (vol)	14%	34%	22%	16%
Don't know (vol)	6%	4%	10%	5%
Unwght N=	345	152	224	276

**[VERSION B]**

**Q. Combating climate change will require some decisions and choices by the New Jersey government. I'd like to ask you about *your* preferences. Which statement comes closer to what you think the government should do, even if neither is perfect:**

The government should impose limits on the 27% sources of green-house gases	
The government should try to reduce 45% greenhouse gases voluntarily by offering incentives to those who reduce their emissions	
Both/neither (vol)	20%
Don't know (vol)	8%
Unwght N=	503

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wh.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Gov't should impose limits	30%	28%	20%	23%	31%	23%	32%	31%	23%	27%	25%	38%	29%	20%	27%
Gov't should reduce voluntarily	43%	48%	44%	50%	41%	47%	43%	47%	52%	47%	33%	38%	43%	62%	39%
Both/neither (vol)	16%	18%	27%	22%	17%	23%	14%	18%	17%	21%	23%	12%	20%	16%	30%
Don't know (vol)	11%	6%	9%	6%	10%	7%	11%	4%	8%	4%	19%	12%	8%	2%	4%
Unwght N=	179	211	102	243	260	305	180	126	120	151	104	92	141	96	97

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Gov't should impose limits	33%	15%	22%	35%
Gov't should reduce voluntarily	46%	42%	45%	43%
Both/neither (vol)	15%	30%	22%	16%
Don't know (vol)	6%	13%	10%	5%
Unwght N=	341	158	224	276

**[END SPLIT SAMPLE]**

**Q. Do you think your mayor and local government should be doing more to help reduce the effects of climate change, should they be doing less, or are they doing enough already?**

More	57%
Less	6%
Enough already	24%
Don't know (vol)	12%
Unwght N=	999

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
More	70%	58%	37%	50%	64%	50%	67%	61%	63%	54%	53%	69%	56%	59%	57%
Less	2%	6%	13%	8%	5%	8%	3%	6%	7%	7%	7%	4%	5%	7%	8%
Enough already	18%	23%	35%	29%	19%	28%	19%	24%	20%	28%	23%	17%	28%	24%	27%
Don't know (vol)	9%	12%	15%	13%	12%	13%	10%	9%	10%	12%	18%	11%	11%	10%	8%
Unwght N=	354	423	199	480	519	637	332	237	209	330	218	194	275	183	194

	Concern over climate change				Education				Region				
	Very	Somewhat	Not very	Not at all	High school or less	Some college	College graduate	Graduate work	Urban	Suburb	Exurban	Phil/ South	Shore
More	76%	64%	40%	21%	56%	52%	62%	62%	63%	59%	51%	65%	46%
Less	2%	4%	7%	22%	6%	7%	8%	5%	5%	4%	11%	5%	10%
Enough already	15%	21%	35%	40%	24%	29%	21%	21%	23%	24%	26%	18%	30%
Don't know (vol)	7%	12%	19%	18%	14%	12%	10%	12%	9%	12%	13%	12%	14%
Unwght N=	389	294	144	168	188	279	296	230	147	343	158	175	176

Now let's talk about residents who live in areas of the state that are prone to flooding, severe weather, and damage by storms.

[SPLIT SAMPLE – ½ VERSION A, ½ VERSION B]

[VERSION A]

Q. When it comes to residents in upper income areas, which statement comes closer to what you think the government should do, even if neither is perfect:

The Government should give these residents the resources to help them either rebuild in the same area or relocate	49%
Homeowners in these areas should pay the costs of rebuilding or relocating on their own	33%
Combination of both (vol)	13%
Don't know (vol)	5%
Unwght N=	498



	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Gov't should give resources	53%	48%	43%	42%	55%	41%	60%	53%	52%	48%	41%	49%	55%	58%	40%
Homeowners should pay	31%	31%	39%	41%	25%	37%	27%	29%	30%	36%	36%	31%	32%	29%	36%
Combination of both (vol)	11%	14%	14%	11%	15%	16%	8%	12%	12%	13%	17%	15%	11%	10%	19%
Don't know (vol)	4%	6%	4%	5%	5%	6%	5%	6%	6%	3%	7%	5%	2%	3%	5%
Unwght N=	174	213	99	240	258	334	152	112	88	181	114	101	136	88	96

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Gov't should give resources	53%	41%	49%	48%
Homeowners should pay	30%	38%	33%	33%
Combination of both (vol)	13%	14%	14%	13%
Don't know (vol)	4%	8%	5%	6%
Unwght N=	344	154	244	251

**[VERSION B]**

**Q. When it comes to residents in lower and middle-income areas, which statement comes closer to what you think the government should do, even if neither is perfect:**

The Government should give these residents the resources to help them either rebuild in the same area or relocate	63%
Homeowners in these areas should pay the costs of rebuilding or relocating on their own	17%
Combination of both (vol)	13%
Don't know (vol)	6%
Unwght N=	504

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-white	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Gov't should give resources	71%	66%	46%	59%	67%	58%	72%	77%	62%	59%	53%	79%	60%	69%	52%
Homeowners should pay	10%	15%	32%	22%	13%	20%	12%	8%	20%	20%	21%	10%	20%	9%	28%
Combination of both (vol)	13%	13%	15%	15%	12%	15%	11%	11%	13%	16%	14%	9%	17%	17%	15%
Don't know (vol)	7%	5%	6%	4%	8%	7%	5%	5%	4%	5%	12%	2%	2%	5%	5%
Unwght N=	179	212	102	244	260	306	180	127	121	150	104	92	142	96	98

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Gov't should give resources	71%	49%	65%	60%
Homeowners should pay	12%	28%	17%	18%
Combination of both (vol)	13%	14%	12%	15%
Don't know (vol)	4%	10%	6%	7%
Unwght N=	340	160	224	277

**[END SPLIT SAMPLE]**

**Q. Do you think the state government in New Jersey SHOULD or should NOT have the power to prohibit homeowners from rebuilding in flood-prone areas?**

	ALL	Concern About Climate Change			
		Very	Somewhat	Not very	Not at all
Should	50%	58%	50%	45%	34%
Should not	43%	35%	41%	50%	58%
Don't know (vol)	7%	7%	9%	6%	8%
Unwght N=	1001	389	294	147	167

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wh.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Should	51%	50%	47%	49%	50%	49%	51%	44%	52%	50%	55%	45%	50%	52%	59%
Should not	40%	44%	46%	46%	40%	45%	40%	49%	40%	42%	38%	48%	44%	41%	33%
Don't know (vol)	10%	6%	7%	5%	9%	6%	9%	7%	8%	8%	7%	7%	6%	7%	8%
Unwght N=	355	423	200	483	518	639	332	238	209	329	220	192	278	184	193

	Education				Region				
	High school or less	Some college	College graduate	Graduate work	Urban	Suburban	Exurban	Phil/South	Shore
Should	47%	48%	47%	59%	45%	56%	56%	47%	38%
Should not	43%	46%	47%	33%	48%	38%	39%	42%	52%
Don't know (vol)	10%	6%	6%	8%	6%	6%	4%	11%	11%
Unwght N=	189	280	297	229	146	343	158	177	177

**Q. If you had to choose between funding roads, bridges, and government buildings [ROTATE: at the current cost], or through [paying a little more in taxes to make them better able to withstand severe weather events], which would you choose?**

		Concern About Climate Change			
	ALL	Very	Somewhat	Not very	Not at all
Current cost	54%	42%	53%	67%	72%
Paying a little more in taxes	40%	53%	41%	29%	17%
Don't know (vol)	7%	5%	7%	4%	10%
Unwght N=	996	388	292	145	167

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wh.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Current cost	41%	56%	68%	58%	50%	55%	51%	54%	58%	53%	49%	50%	54%	48%	61%
Paying a little more in taxes	54%	37%	24%	36%	43%	39%	42%	41%	38%	43%	36%	40%	42%	50%	34%
Don't know (vol)	5%	7%	8%	6%	7%	6%	7%	6%	4%	4%	14%	10%	4%	2%	5%
Unwght N=	352	420	201	480	516	639	327	238	207	329	217	193	275	184	194

	Education				Region				
	High school or less	Some college	College graduate	Graduate work	Urban	Suburban	Exurban	Phil/South	Shore
Current cost	52%	56%	57%	50%	49%	53%	65%	44%	62%
Paying a little more in taxes	39%	38%	38%	46%	42%	40%	30%	51%	32%
Don't know (vol)	9%	7%	5%	4%	8%	7%	5%	5%	6%
Unwght N=	185	281	297	226	145	342	157	175	177

**Q. There has been a lot of discussion about who should pay whatever the added costs are to make New Jersey more resilient to the impact of climate change. Please tell me if each of the following should pay for a major share, a minor share, or no share at all. First:**

	<b>Residents through a charge on their utility bills</b>	<b>The state government through the taxes it collects</b>	<b>Fuel producers and users that cause the most emissions of greenhouse gases</b>
Major share	6%	43%	62%
Minor share	45%	35%	22%
No share at all	45%	18%	10%
Don't know (vol)	3%	4%	6%
Unwght N=	497	498	498

**Residents through a charge on their utility bills**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wh.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Major share	13%	3%	2%	6%	7%	6%	7%	6%	3%	9%	5%	9%	4%	5%	8%
Minor share	47%	48%	39%	41%	49%	42%	50%	55%	54%	34%	43%	44%	48%	49%	55%
No share at all	39%	43%	57%	50%	41%	48%	40%	37%	42%	53%	45%	41%	46%	45%	35%
Don't know (vol)	1%	5%	2%	3%	3%	4%	3%	2%	1%	4%	6%	6%	2%	1%	1%
Unwght N=	174	211	99	239	258	332	152	112	87	182	113	102	135	88	96

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Major share	8%	2%	4%	8%
Minor share	52%	32%	45%	47%
No share at all	36%	64%	47%	43%
Don't know (vol)	4%	2%	4%	2%
Unwght N=	344	153	243	250

**The state government through the taxes it collects**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wh.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Major share	53%	42%	32%	38%	48%	44%	44%	48%	50%	39%	37%	46%	44%	46%	44%
Minor share	35%	35%	32%	32%	37%	35%	33%	29%	39%	37%	34%	34%	34%	38%	37%
No share at all	9%	21%	29%	27%	10%	17%	19%	22%	10%	19%	21%	17%	18%	16%	18%
Don't know (vol)	3%	3%	8%	3%	5%	4%	3%	1%	1%	5%	8%	3%	4%	0%	1%
Unwght N=	175	211	99	239	259	333	152	112	87	182	114	102	136	88	96

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Major share	49%	32%	40%	50%
Minor share	38%	27%	35%	32%
No share at all	9%	37%	20%	15%
Don't know (vol)	4%	3%	5%	3%
Unwght N=	344	154	243	251

**Fuel producers and users that cause the most emissions of greenhouse gases**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non-wh.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Major share	73%	59%	48%	54%	69%	64%	60%	56%	73%	64%	54%	56%	65%	68%	70%
Minor share	18%	22%	29%	25%	18%	16%	28%	30%	17%	20%	19%	30%	20%	19%	16%
No share at all	4%	11%	19%	16%	5%	13%	6%	11%	8%	10%	12%	7%	10%	11%	12%
Don't know (vol)	5%	8%	4%	6%	7%	6%	7%	3%	3%	6%	15%	7%	6%	2%	2%
Unwght N=	174	212	99	239	259	333	152	112	87	182	114	102	135	88	96

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Major share	70%	44%	56%	70%
Minor share	19%	27%	26%	15%
No share at all	3%	25%	10%	11%
Don't know (vol)	8%	4%	8%	5%
Unwght N=	345	153	244	250

**Q. Please tell me if you would strongly support, somewhat support, somewhat oppose, or strongly oppose each of the following proposed policies. First:**

	Requiring affordable and low-income rental homes to meet energy efficiency building standards	Requiring all customers in the state to pay an additional 50 cents on their monthly electric bill to help low-income and households make their homes more energy efficient	Requiring utility companies to provide financial incentives to help low-income customers cover the cost of energy-saving improvements to their homes
Strongly support	50%	28%	50%
Somewhat support	29%	27%	30%
Somewhat oppose	6%	11%	8%
Strongly oppose	10%	32%	10%
Depends (vol)	1%	1%	1%
Don't know (vol)	3%	1%	1%
Unwght N=	506	506	506

**Requiring affordable and low-income rental homes to meet energy efficiency building standards**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Strongly support	61%	52%	33%	53%	48%	46%	55%	54%	50%	51%	45%	59%	50%	46%	43%
Somewhat support	24%	30%	35%	27%	31%	31%	28%	34%	28%	24%	31%	22%	32%	33%	34%
Somewhat oppose	6%	6%	8%	6%	6%	6%	7%	4%	7%	7%	8%	9%	6%	7%	4%
Strongly oppose	5%	10%	16%	11%	9%	11%	8%	6%	13%	11%	10%	6%	10%	11%	17%
Depends (vol)	1%	1%	1%	1%	1%	1%	1%	0%	0%	2%	1%	0%	1%	1%	1%
Don't know (vol)	2%	2%	7%	2%	4%	5%	1%	2%	2%	5%	5%	4%	2%	1%	1%
Unwght N=	180	213	102	244	262	307	181	126	122	151	105	92	143	96	99

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Strongly support	55%	40%	51%	50%
Somewhat support	32%	23%	29%	30%
Somewhat oppose	5%	9%	7%	5%
Strongly oppose	6%	19%	10%	10%
Depends (vol)	1%	1%	0%	2%
Don't know (vol)	2%	7%	3%	3%
Unwght N=	340	162	225	278



**Requiring all customers in the state to pay an additional 50 cents on their monthly electric bill to help low-income and households make their homes more energy efficient**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Strongly support	34%	34%	10%	26%	30%	24%	34%	28%	32%	25%	29%	34%	29%	25%	23%
Somewhat support	37%	21%	25%	26%	28%	26%	31%	37%	15%	25%	30%	29%	34%	29%	21%
Somewhat oppose	7%	12%	11%	12%	10%	12%	8%	8%	13%	12%	9%	9%	11%	10%	15%
Strongly oppose	19%	32%	50%	35%	29%	35%	24%	26%	40%	33%	27%	26%	25%	36%	40%
Depends (vol)	1%	1%	1%	1%	1%	1%	1%	1%	0%	2%	1%	1%	1%	0%	1%
Don't know (vol)	2%	0%	4%	0%	2%	2%	1%	0%	0%	2%	4%	1%	0%	0%	0%
Unwght N=	179	215	101	245	261	306	181	127	122	151	104	92	141	96	99

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Strongly support	32%	20%	29%	27%
Somewhat support	32%	18%	25%	31%
Somewhat oppose	10%	11%	9%	12%
Strongly oppose	24%	47%	35%	28%
Depends (vol)	1%	0%	1%	2%
Don't know (vol)	0%	3%	2%	1%
Unwght N=	340	162	225	278

**Requiring utility companies to provide financial incentives to help low-income customers cover the cost of energy-saving improvements to their homes**

	Party ID			Gender		Race		Age				Income			
	Dem	Ind	Rep	Male	Female	White	Non- wht.	18-34	35-49	50-64	65+	<\$50K	\$50K- <\$100K	\$100K- <\$150K	\$150K+
Strongly support	59%	49%	38%	46%	53%	44%	57%	53%	46%	51%	48%	55%	49%	48%	48%
Somewhat support	29%	31%	30%	32%	29%	33%	27%	35%	29%	28%	27%	26%	34%	35%	28%
Somewhat oppose	4%	7%	14%	8%	8%	9%	7%	7%	11%	6%	7%	8%	9%	8%	9%
Strongly oppose	5%	11%	15%	13%	7%	11%	7%	4%	13%	11%	12%	5%	6%	8%	15%
Depends (vol)	2%	0%	3%	0%	2%	2%	1%	0%	1%	1%	4%	0%	1%	1%	0%
Don't know (vol)	1%	2%	0%	1%	2%	2%	1%	1%	0%	2%	3%	6%	1%	0%	1%
Unwght N=	180	214	101	245	261	307	181	127	121	150	106	92	142	96	99

	Concern About Climate Change		Education	
	Very/ Somewhat	Not very/ at all	Some college or less	College or more
Strongly support	53%	43%	51%	46%
Somewhat support	34%	22%	28%	33%
Somewhat oppose	8%	8%	8%	8%
Strongly oppose	4%	21%	9%	11%
Depends (vol)	1%	2%	2%	0%
Don't know (vol)	1%	3%	1%	2%
Unwght N=	340	162	225	278

## Methodology

The Rutgers-Eagleton Poll was conducted by telephone using live callers March 29 - April 9, 2018 with a scientifically selected random sample of 1,008 New Jersey adults, 18 or older. Respondents within a household are selected by asking randomly for the youngest adult male or female currently available. If the named gender is not available, the youngest adult of the other gender is interviewed. The poll was available in Spanish for respondents who requested it. This telephone poll included 409 landline and 599 cell phone adults, all acquired through random digit dialing. Distribution of household phone use in this sample is:

Cell Only:	33%
Dual Use, Reached on Cell:	27%
Dual Use, Reached on LL:	39%
Landline Only:	2%

The data were weighted to be representative of the non-institutionalized adult population of New Jersey. The weighting balanced sample demographics to target population parameters. The sample is balanced to match parameters for sex, age, education, race/ethnicity, region and phone use. The sex, age, education, race/ethnicity and region parameters were derived from 2017 American Community Survey PUMS data. The phone use parameter was derived from estimates provided by the National Health Interview Survey Early Release Program.<sup>123</sup> Weighting was done in two stages. The first stage of weighting corrected for different probabilities of selection associated with the number of adults in each household and each respondent's telephone usage patterns. This adjustment also accounts for the overlapping landline and cell sample frames and the relative sizes of each frame and each sample. This first stage weight was applied to the entire sample, which included all adults.

The second stage of the weighting balanced sample demographics, by form, to match target population benchmarks. This weighting was accomplished using SPSSINC RAKE, an SPSS extension module that simultaneously balances the distributions of all variables using the GENLOG procedure. Weights were trimmed to prevent individual interviews from having too much influence on the final results. The use of these weights in statistical analysis ensures that the demographic characteristics of the sample closely approximate the demographic characteristics of the target population.

All surveys are subject to sampling error, which is the expected probable difference between interviewing everyone in a population versus a scientific sampling drawn from that population.

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<sup>1</sup> NCHS, National Health Interview Survey, 2012-2016; U.S. Census Bureau, American Community Survey, 2011-2015; and infoUSA.com consumer database, 2012-2016.

<sup>2</sup> Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, July–December 2015. National Center for Health Statistics. May 2016.

<sup>3</sup> Blumberg SJ, Luke JV. Wireless substitution: Early release of estimates from the National Health Interview Survey, January–June 2018. National Center for Health Statistics. December 2018.

Sampling error should be adjusted to recognize the effect of weighting the data to better match the population. In this poll, the simple sampling error for 1,008 New Jersey adults is +/-3.1 percentage points at a 95 percent confidence interval. The design effect is 1.30, making the adjusted margin of error +/- 3.5 percentage points. Thus if 50 percent of New Jersey adults in this sample favor a particular position, we would be 95 percent sure that the true figure is between 46.5 and 53.5 percent (50 +/- 3.5) if all New Jersey adults had been interviewed, rather than just a sample.

Sampling error does not take into account other sources of variation inherent in public opinion studies, such as non-response, question wording, or context effects.

This Rutgers-Eagleton Poll was fielded by Braun Research, Inc. The questionnaire was developed and all data analyses were completed in house by the Eagleton Center for Public Interest Polling (ECPIP). The questionnaire was developed and all data analyses were completed in house by Dr. Ashley Koning and Dr. Cliff Zukin at the Eagleton Center for Public Interest Polling (ECPIP) at Rutgers University-New Brunswick. William Young and Kyle Morgan assisted with preparation of the questionnaire and analysis and preparation of this release. These questions were paid for and sponsored by the New Jersey Climate Change Alliance. Full questionnaires are available on request, and can also be accessed through our archives at [eagletonpoll.rutgers.edu](http://eagletonpoll.rutgers.edu).

**Weighted Sample Characteristics  
1,008 New Jersey Adults**

<b>Male</b>	47%	<b>Democrat</b>	35%	<b>18-29</b>	18%	<b>HS or Less</b>	30%	<b>White</b>	57%
<b>Female</b>	53%	<b>Independent</b>	44%	<b>30-49</b>	31%	<b>Some College</b>	30%	<b>Black</b>	12%
		<b>Republican</b>	22%	<b>50-64</b>	31%	<b>College Grad</b>	23%	<b>Hispanic</b>	18%
				<b>65+</b>	20%	<b>Grad Work</b>	17%	<b>Other</b>	12%